

# The **MODEL BUILDER**



MAY 1973

85 cents

volume 3, number 18



# CARL GOLDBERG

**TOP FLYERS WANT RELIABILITY  
—NOT PRICE!**

# CG RETRACTS

When top R/C flyers select equipment, the one thing they want most is reliability—not price. They look things over very carefully for possible trouble. That's why we're proud to have so many of the best flyers telling us how satisfied they are with CG Retracts. For instance, nationally known Bill Thomas says:



I have used the Goldberg Retracts for the past year with outstanding success. I have them in two of my 7 3/4 lb. III Perfection pattern planes. One ship has had 30 gals. of fuel through it, and with no land-

ing gear malfunctions. Considering our turbulent winds in Oklahoma, I must say the Goldberg gear is extra tough to fly that much and not break any parts. If I were to list adjectives for it they sure would include reliable and simple—and that's why it's a great landing gear system.

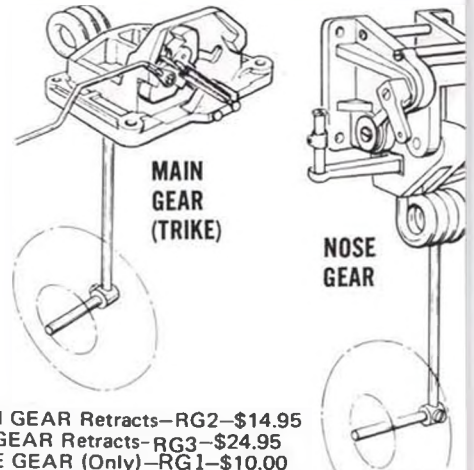
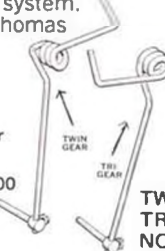
William E. Thomas

### LONG STRUTS & ADJUSTABLE AXLES

Can also be used in older model CG Retracts.

Twin Gear set RS2—\$3.00

Tri Gear set RS3—\$4.50

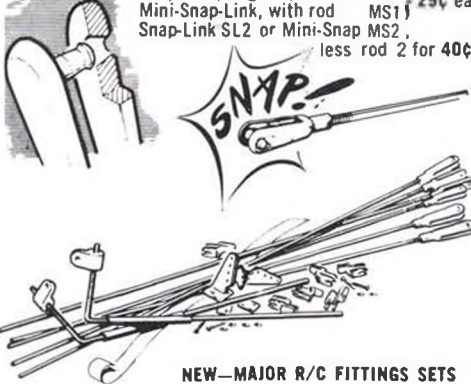


TWIN GEAR Retracts—RG2—\$14.95  
TRI-GEAR Retracts—RG3—\$24.95  
NOSE GEAR (Only)—RG1—\$10.00

**UNIQUE SNAP-LINK!** Patent 3711134. Now for the first time—you can buy a truly safe link—the SNAP-Link!

- Tiny 45° shoulder snaps through arm, prevents accidental opening. So unique it's Patent Pending!
- One-piece design—no separate pieces that might come apart.

Snap-Link, Regular, with rod SL1 } 29¢ ea  
Mini-Snap-Link, with rod MS1 }  
Snap-Link SL2 or Mini-Snap MS2, }  
less rod 2 for 40¢



### NEW—MAJOR R/C FITTINGS SETS

Here's the economical way to buy the major fittings for your multi-ship. In one set, you get all the horns, links, keepers, bellcranks, or strip aileron linkage, and hinge material—and at a saving. R/C Fittings Set No. 1 for ship with standard ailerons. RFS1 \$3.50  
R/C Fittings Set No. 2 for ship with strip ailerons. RFS2 \$3.50

### NEW! KLETT PUSHROD EXIT GUIDES

To protect your fuselage and insure smooth operation of your pushrods. Precision made of tough nylon. Easy installation. Large for 5/64" wire, small for 1/16" wire.

PEG-1 LARGE 4 per pkg. 75¢  
PEG-2 SMALL 4 per pkg. 75¢



### KLETT HINGES — WORLD'S FINEST!

Designed and manufactured by Roy Klett, originator of world-famous RK hinges. An exclusive with Carl Goldberg, these hinges are made with exceptional care and attention to detail. The small RK2 hinges are so thin all you need is a knife slit. The regular size RK3 hinges are the slickest you've ever seen — try holding one leaf and waving the other! And both have removable music wire pins. Ask your dealer for the best — Klett hinges.

RK2-7 7 for \$1.10      RK2-15 15 for \$1.95  
RK3-7 7 for \$1.25      RK3-15 15 for \$2.35



### 5/32" ADJUSTABLE AXLE

Adjustable axle allows you to easily have the strut length you want. Both the axle and screw are hardened steel. Just file a flat on the strut, and tighten axle in place. AA1 75¢ ea.

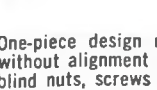
### STEERABLE NOSE GEAR

Versatile — steering arm can be to either side, or slightly up or down, or mounted on bottom with extra collar in slot. Steering arm is nylon, stiff enough for good control, yet can flex under shock to protect servo. Collar is hardened steel — won't strip like brass. Screw is hardened steel, too. You can really torque it and get good grip on music wire strut without a flat.

Complete steerable nose gear with nylon bearing, 3/32" plated music wire strut, extra collar, blind nuts, screws and washers G16N \$2.50.



**NYLON STEERING ARM**  
Hardened steel collar and screw SA1 75¢.



### NYLON BEARING

One-piece design mounts to firewall without alignment problems. Includes blind nuts, screws and washers NB1 75¢.



### CONTROL HORNS

Our new horns have the upright part rising from the center of the base for maximum stability. Holes are right size for 3/64" wire; nut plate for simplest mounting. Long horns CH1 or short horns CH2, with screws—50¢/2.



### NYLON REINFORCING TAPE

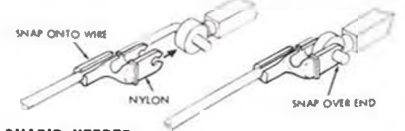
This nylon reinforcing tape is extremely tough when applied with epoxy around the center when joining wing halves. 2 1/2" wide x 5 ft.—N2 50¢. 3/4" wide x 5 ft. N1 25¢.



**NEW KLETT SAFETY DRIVER**  
SOCKETS DOWN ONTO SCREW HEAD — CAN'T SLIP OFF AND DAMAGE YOUR WING!  
Takes Round Head Screws and Binder Head.

### KLETT SAFETY DRIVER

For 1/4" Nylon Screws SD1 } 99¢ ea  
For #10 Nylon Screws SD2 }

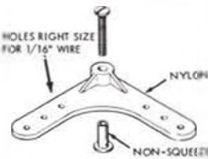


### SNAP'R KEEPER

Quickest, handiest way to secure pushrod wire end to servos, horns, etc. Works on wire 3/4 to 1/4" diameter. SK1 50¢ for 4.

### REPLACEMENT FOAM WINGS, ETC.

To go with your own design fuselage. Proven efficient Ranger 42 foam wing gets you in the air quickly — \$3.95. Stab and vertical fin, set \$1.95. Assembled Ranger 42 fuselage, plus bearings, nosegear, etc., \$9.95.



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Bellcrank has steel bushing of proper size, so crank can be screwed firmly in place without binding. No electrical noise—all metal parts are screwed tightly together—AB1 50¢ for 2.



### 1/2 A BELLCRANK AND HORN

Made of nylon, this new set provides smooth 1/2 A control line operation. Easy on dacron lines, too BCH1 25¢.



### SHEET METAL SCREWS

Like wood screws, but better. Sharp, clean, full-depth threads, hard and strong. Excellent for mounting servos, etc. Includes washers—#2 x 3/8 SMS2 30¢ for 10; #4 x 3/8 SMS4 30¢ for 8.

P.S. For best service, see your dealer for items you want. If not available, write direct; add 50¢ per item (\$1 outside U.S.). Minimum order \$1.

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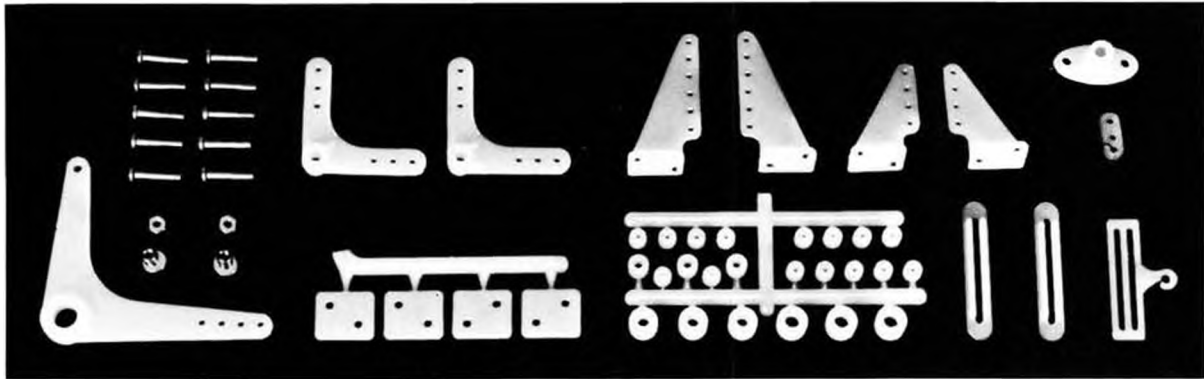
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I am sending 25¢ for 8 pg. Illustrated Catalog with, "Recommendations in Starting in R/C," Basic Explanation of R/C Equipment and Radio Control Definitions.

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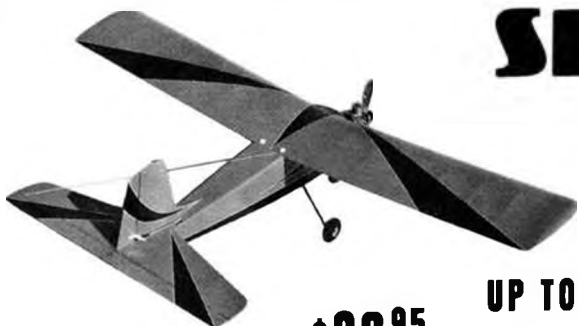
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*World's Largest Manufacturer of Proportional R/C Equipment*



# SIG KADET

THE IDEAL R/C TRAINER

FOR .19-.29 ENGINES

UP TO 3 CHANNEL RADIO EQUIPMENT

EASY TO BUILD

**\$23.95**

LENGTH: 42"  
WING SPAN: 57"  
WEIGHT: 4 LBS.



KIT RC-31

Sturdy, built-up balsa construction and light wing loading combine in the Kadet to produce a perfect sport or beginners' model. The flying performance of the high-lift, flat-bottomed airfoil is responsive to control and inherently stable. A tricycle landing gear helps ground handling, take off and landing characteristics. We predict that this compact bundle of dynamite will quickly become THE standard RC Trainer.

Handy Printed Fuselage Sides — Build Internal Structure Directly On the Wood.

Molded Plastic Engine Cowling.

Formed Nose Gear with Shock-Absorbing Coil.

Torsion Bar Main Gear.

Hardware Package Includes Nylon Nose Gear Bearing, Nylon Control Horns and Molded Nylon Surface Hinges.

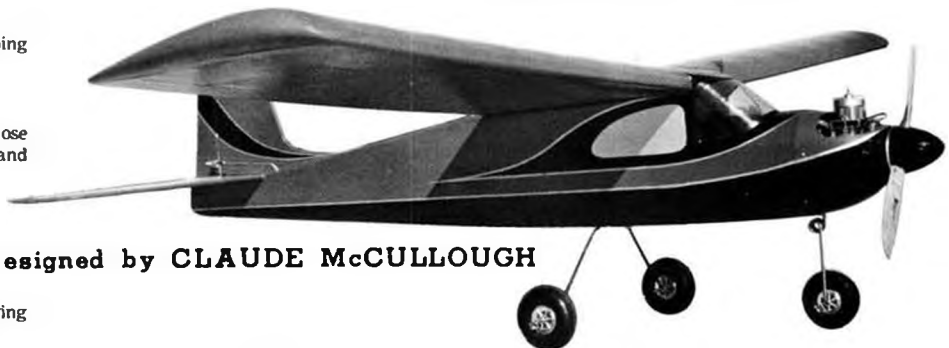
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Top Quality Balsa and Hardwood.

Full Size Plans.

Complete Illustrated Building and Flying Instructions.

Designed by **CLAUDE McCULLOUGH**



**SIG MANUFACTURING CO. . . . Montezuma, Iowa**

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This publication covers all phases of the hobby, with feature articles on radio control, free flight, and control line.

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**The BEST all-modeling Magazine from "DOWN UNDER"**

# The MODEL BUILDER

MAY

1973

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## CONTENTS

### FEATURES

WORKBENCH, Bill Northrop .....	4
OVER THE COUNTER, Bill Northrop .....	5
R/C PYLON, Tom Christopher .....	11
RADIO CONTROL REPORT, Frank Schwartz .....	12
PRODUCTS IN USE, Fernando Ramos .....	16
PRODUCTS IN USE, Jerry Fitzgerald .....	17
R/C SOARING, Le Gray .....	20
R/C CARS, Gene Husting .....	24
PRODUCTS IN USE, Fernando Ramos .....	25
SCALE F/F, Fernando Ramos .....	26
HANNAN'S HANGAR, Bill Hannan .....	30
FREE FLIGHT, Ron Evans .....	34
F/FAI, Al Vela .....	37
PLUG SPARKS, Jack Transue .....	38
CONTROL LINE, Dale Kirn .....	40
MAIN SHEET, Don Prough .....	42

### CONSTRUCTION

BANTEE, John Chapis .....	9
WOODWIND, John Krouse .....	18
TEAKETTLE, Daniel Walton .....	28
PEANUT MONOCOUCPE 110 SPECIAL, Walt Mooney .....	31
AERBO .020 REPLICIA, Phil Bernhardt .....	39

Cover: All the glory of old time free flight is summed up in this photo taken at the Old Timer event, 1971 AMA Nationals. Very appropriately, the O.K. Twin ignition powered, Sal Taibi designed Powerhouse belongs to Tim Banaszak, Secretary/Treasurer of SAM (Society of Antique Modelers). Kodachrome 35mm transparency by Malcolm J. Heaton, Montreal, Quebec, Canada.



MODEL BUILDER's new location, in fact, so new that we don't yet have the sign up! There's 1100 square feet, and it's already filled up, but at least we have room to breathe . . . for a while.

## from Bill Northrop's workbench . . .

### WHOSE AIR IS IT?

We're glad to see that AMA Headquarters has not taken the same position of meek submission to the FAA Model Aircraft Operating Standards as being promoted by some of the model press. While it is quite advisable not to noisily stir the pot (which could increase the stink), it is nevertheless important that we maintain steady pressure on the FAA so that it doesn't turn the advisory circular of standards into a set of hard fast rules.

While most FAA officials have been reasonable and understanding of the situation, there have been those who, through lack of knowledge or interest, have simply adopted the old guarded-ignorance rule of thumb, "If you don't

know what it's all about, say NO!"

As a result of reports from various clubs which have run into negative local FAA reaction, AMA took the problem to the Washington office which originated the advisory circular. Advance word has it that as of the middle of April, a directive was to have been issued by the FAA to Air Traffic Control personnel, pointing out that the standards are advisory only and are not to be used as established rules. According to AMA, the document . . . "should encourage local FAA cooperation to permit flying above 400 feet, for example, where such flying will not cause problems with full scale air traffic control."

Even in the above statement, we

*Continued on page 61*

Persons wanting to combine a sunny climate and a great vacationland with a chance to see the nation's largest display of models in every category will be in the Southern California area during June 29, 30 and July 1 for MACS '73.

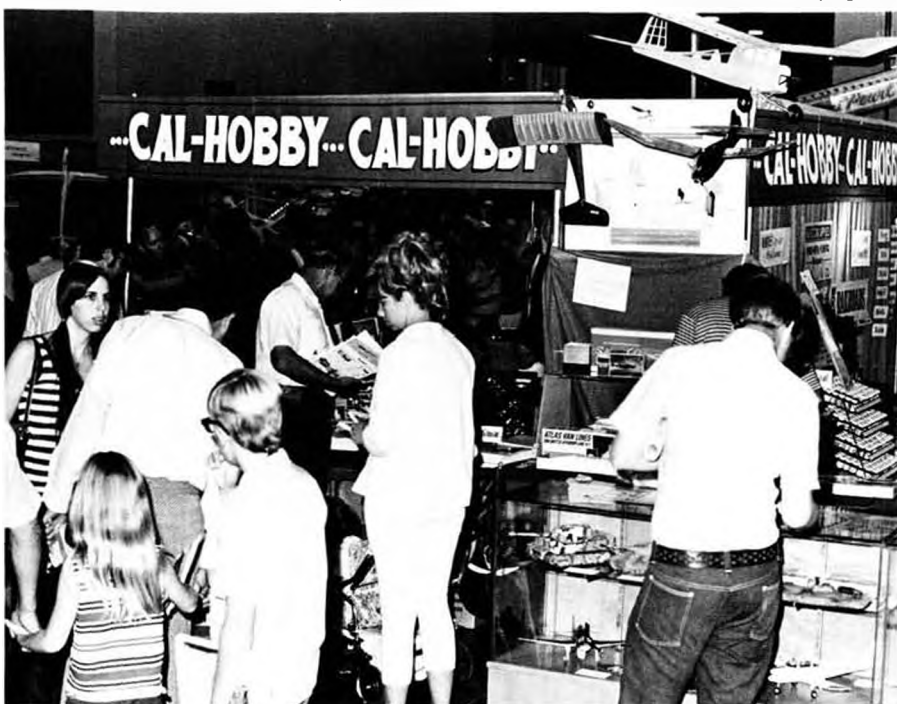
It's the third Annual Model and Craft Show to be held at the Anaheim Convention Center, Anaheim, California. There will be over two hundred exhibitors on display and more than eight hundred registered buyers at this "super event." It is definitely a show with something for everyone with an interest in models and crafts. Exhibits will include thousands of radio control gliders, airplanes, boats, cars, static displays of all models including miniature railroading. Craft enthusiasts will find exhibits covering a wide range of interests such as macrame, ceramics and jewelry.

It is also a show that is loaded with special events and contests. Indoor and outdoor demonstrations of radio controlled planes, cars and boats plus rockets and U-control planes will occur continuously during the three-day period. In addition there are "make and take" crafts and contests with prizes, trophies and awards.

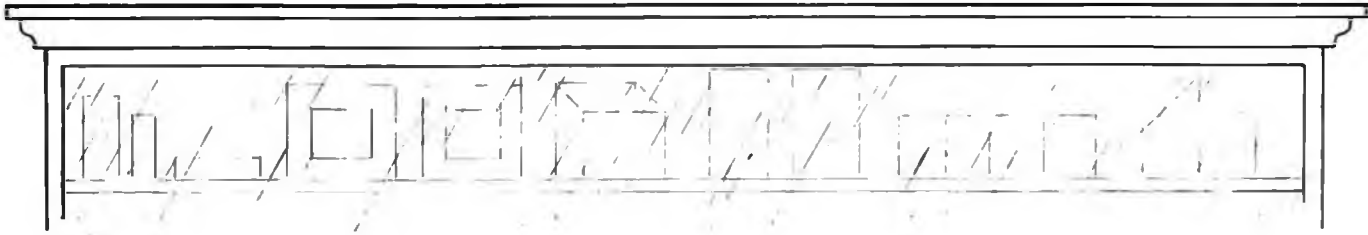
Here is a hobbyist's paradise, because not only will all the latest model and crafts be on display, the manufacturer's representatives will be present to answer questions and tell all about the products.

Summer vacation plans involving Southern California should definitely include a visit to MACS '73 at the Anaheim Convention Center June 29, 30 and July 1, 1973.

Don't miss the largest of its kind, the Third Annual Model and Craft Show.



# OVER THE COUNTER



● RS Systems' line of radios for 1973 feature new open-stick gimbals of smooth working, molded nylon. D&R Products, manufacturers of the new gimbals, also furnish the switch guard for the transmitter on-off switch, the airborne charging jack for external mounting on the plane, and also, of course, the well-known D&R servo mechanics which are currently being used by many leading R/C equipment manufacturers.

Other features of the RS Systems radio include: co-axial antenna mount, not apt to come loose inside from continued mounting and demounting of the telescopic antenna; separate, external, dual charger for transmitter and airborne pack; smallest, lightest multi-channel receiver in the industry; I.T.T. Cannon centilok pins for continued, positive, self-cleaning contacts; and plug-in module RF boards for transmitter and receiver, allowing for quick, easy, completely matched and tuned switch-

ing of frequencies between the 72, 53, and 27 MHZ bands. The address is 2407 South Broadway, Santa Ana, California 92707.

\* \* \*

Sig Mfg. Co.'s new Kadet, designed by Claude McCullough, is a 57 inch wingspan R/C trainer for .19 to .29 engines. The design features a high lift, flat-bottomed airfoil for quick recoveries from "difficult" positions in which a trainer may find itself from time to time. Dihedral built into the wing provides the inherent stability that's so nice to have going for you when you're in the early learning stages.

The kit features printed sides for easy internal construction, molded plastic engine cowl, formed nose and main landing gear, extensive hardware package, die-cut ply and balsa parts, full size plans, and complete building and flying instructions. Price is \$23.95.

The Tiger is Sig's third in the Classic Series, typical rubber powered models



Hartman Fiberglass 50/800 on a starboard tack. Built by Fred Johnson.

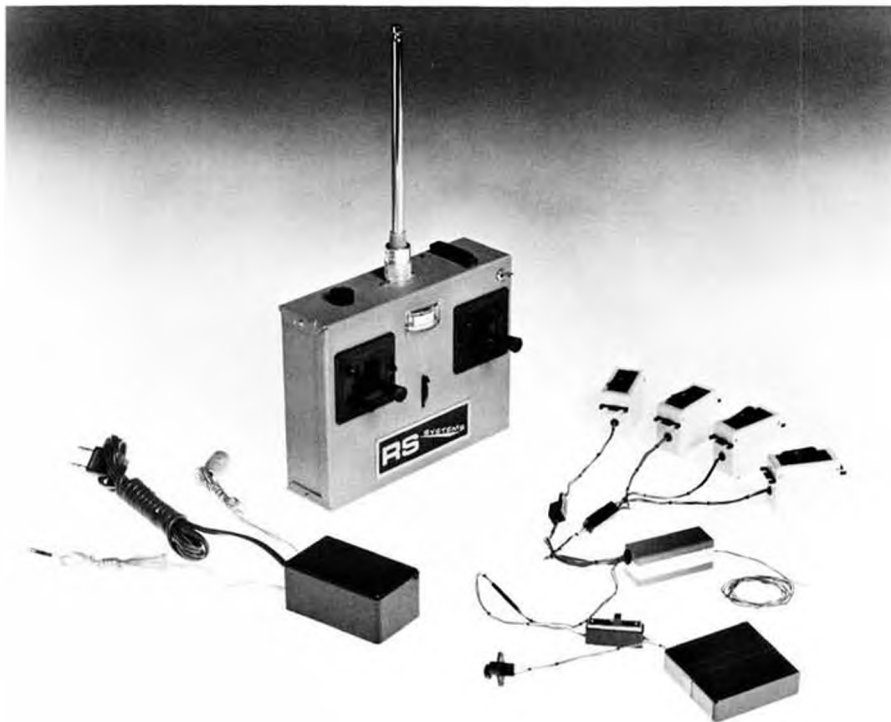
of the 1930's, that seem to be enjoying a sizable come-back all over the country. This \$1.95 kit is a 21-1/2 inch span "Outdoor Commercial" featuring die-cut balsa parts, covering material, wheels, Sig contest rubber, and formed plastic prop.

Designed by Paul McIlrath, the Tiger should be easy to build, with its detailed plans, isometrics, and instructions. Complete flying instructions are also included.

\* \* \*

CRC Electronics, a long-time distributor of Orbit radios in Canada, will soon be manufacturing this well known product for consumer sales in our neighboring country to the north. The obvious advantages for Canadian modelers include more economical prices, along with better service and parts availability. The joint venture agreement was made recently between Orbit's owner, Charles Speer and CRC's president Len Klebanoff.

The whole idea is not all that new to CRC, since it has been distributing Orbit radios in Canada for many years. Located in Toronto, Canadian Radio



RS Systems' 6-channel radio with molded open stick gimbals and servos by D & R Products. Receiver is smallest and lightest multi-channel unit on the market.



U.S. Coast Guard 44 foot lifeboat, scaled to 33" length and kitted by Dumas. For R/C and electric power. Built of die-cut mahogany frames and planked with 1/8 x 1/2 inch balsa.

Control Electronics, should, without any difficulty, be able to produce a radio every bit as reliable as the U.S.-built systems.

\* \* \*

Richard's Enterprises, Welsh & Swedesford Rds, North Wales, Pa. 19454, is offering a new field box aimed primarily at R/C fliers. The unit comes completely

assembled and finished in heirloom (!) brown stain for \$34.95, or partially built, for finishing and completion by the purchaser, at \$27.95.

\* \* \*

Dumas Products, Inc., 790 S. Park Avenue, Tucson, Arizona 85719, has announced two new power boats at somewhat opposite ends of the model-

ing spectrum.

First, there is the Atlas Van Lines 40 . . . an R/C scale model of the big "pickle forked" Unlimited Hydroplane driven by Bill Muncey. For all out racing or just storming around, the AVL-40 is of poplar and birch plywood construction with molded plastic cowl. Length 36 inches, beam 14-1/2 inches, price \$24.95.

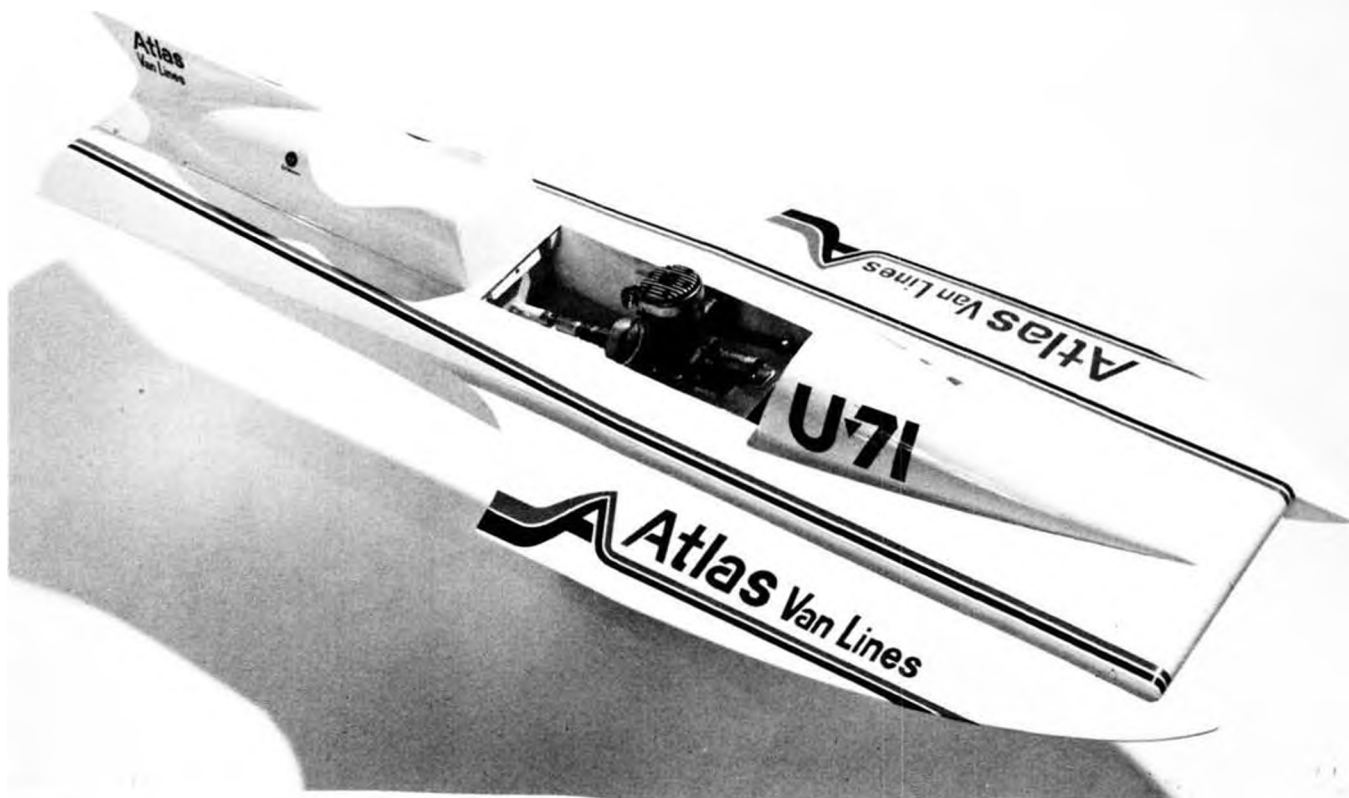
The second boat, for R/C and electric power (Dumas-Pittman motors, of course) or for display only, is a scale model of the U.S. Coast Guard 44 foot lifeboat. Kit includes die-cut mahogany frames and deck, 1/8 x 1/2 inch balsa planking, and all deck hardware (Motors and running hardware not included). Length 33 inches, beam 9 inches, price \$33.95.

\* \* \*

Hartman Fiberglass, Argenta, Ill. 62501, is now producing a fiberglass hull for the 50/800 open class of model yachting. Priced at \$24.00 for the basic hull, the company has many optional parts available. You can send \$1.00 for a new catalog covering over 60 boat and aircraft designs. Price is refundable with any order.

\* \* \*

Kraft Systems will shortly announce availability of its KPS-15 servo with a 6 ohm motor capable of producing over 10 pounds of static thrust with approx-

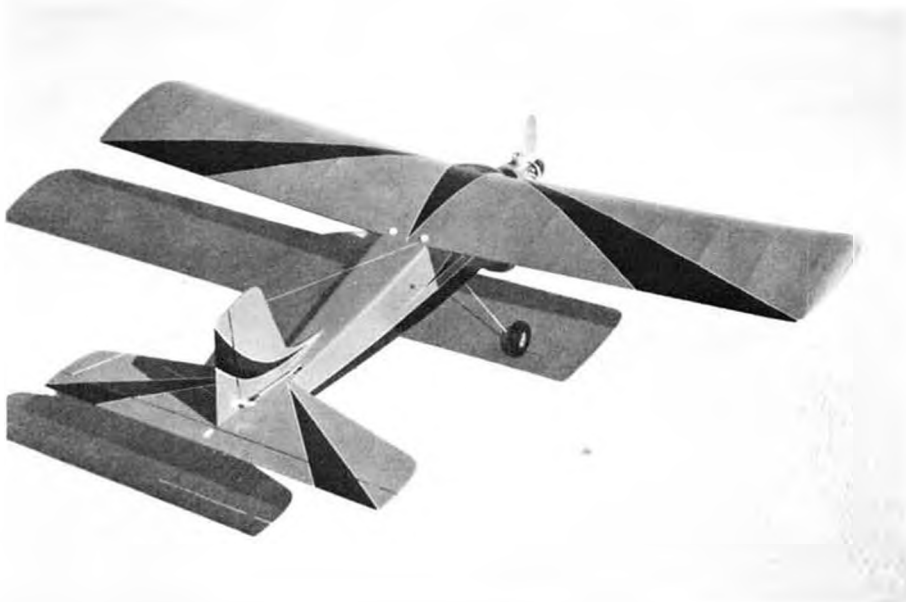


This 36" model of the "pickle forked" Unlimited Hydroplane driven by Bill Muncey is kitted by Dumas Products. Poplar and birch plywood construction with molded plastic cowl. Beam is 14-1/2".





Third in the Classic Series being produced by Sig Mfg. Co. is this 21-1/2 inch span Tiger rubber powered model designed by Paul McClrath.



The Kadet is Sig's new R/C trainer designed by Claude McCullough. Span is 57", and it can be flown with .19 to .29 engines.



Richard's Enterprises is offering this R/C field box. May be purchased partly or completely finished.

The MODEL BUILDER

imately 0.4 seconds total transit time. This servo should be ideal for many boat and car applications.

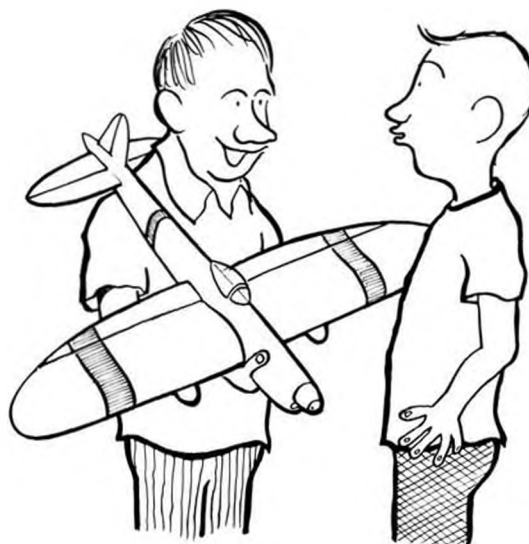
\* \* \*

Astro Flight, Inc., manufacturers of several R/C gliders, including the new, highly successful AS-W17 (See "Snofly" article in this issue) has moved to new quarters at 13377 Beach Avenue, Venice, California 90291, phone (213) 821-6242.

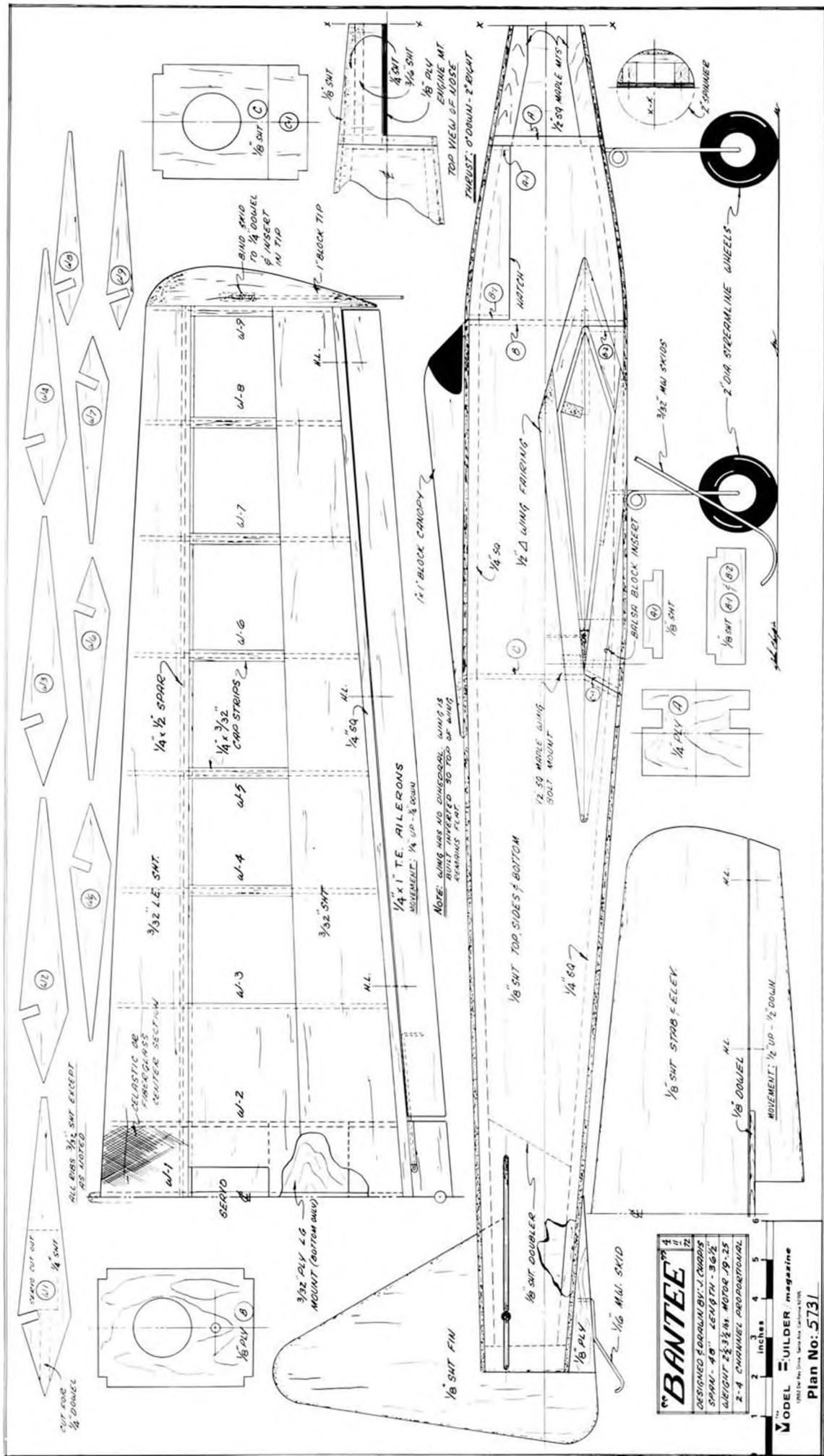
The brand new building has over twice the space of the old facility. Production of the AS-W17 has been increased by 30 percent. The firm is also busy fulfilling a contract with Northrop Corporation's Laser System Laboratory for electric powered flying wing aircraft related to the RPV (Remote Piloted Vehicle) program.

\* \* \*

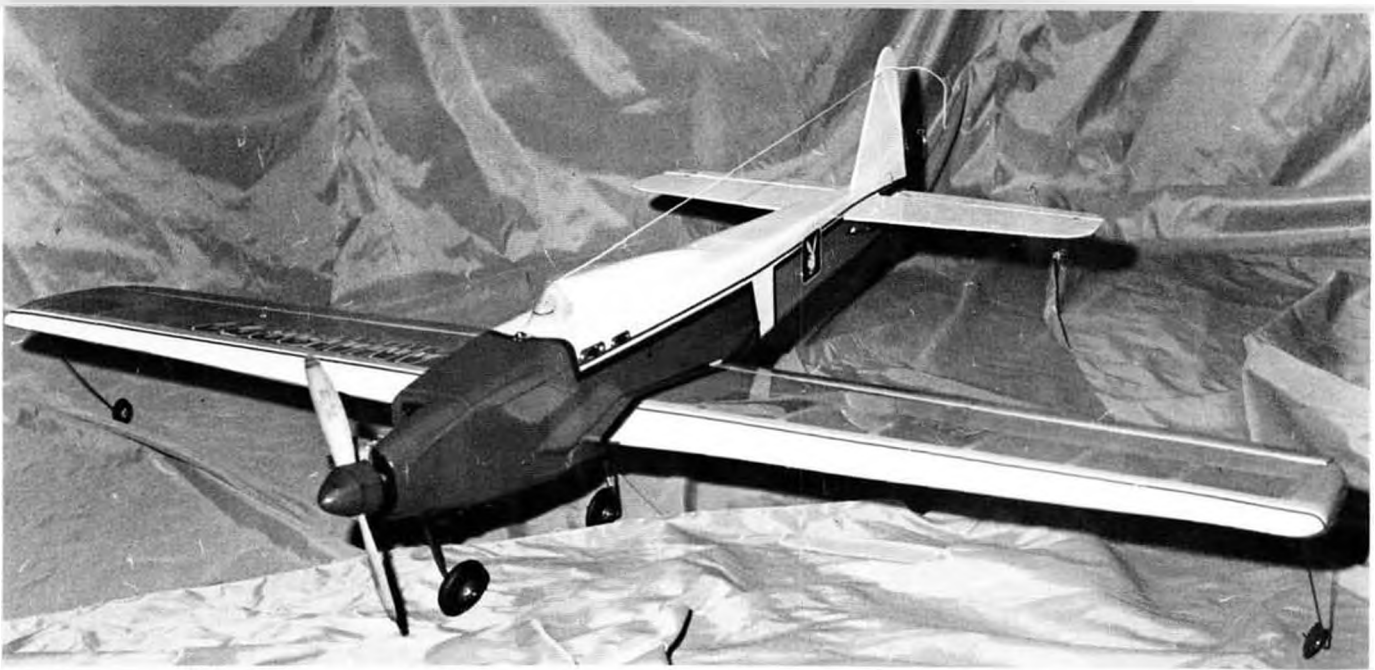
If you're interested in obtaining some rather unusual plans, send a stamped, addressed envelope to Gordon Coddling, 4572 West 147th St., Lawndale, Calif. 90260. His list includes such things as: copies of original factory drawings of WWI planes ranging in price from \$8.00 (10 drawings of the S.P.A.D. 7, prints poor, but original) to \$75.00 (Sopwith Pup, 150 drawings!); plans for home-built aircraft of the 1930's ranging in price from \$2 to \$50, some of which are full size; scale drawings of the above and other rare and familiar aircraft; Olt Timer model drawings for rubber and gas; plus some miscellaneous drawings of engines, engine installations, propellers, etc. ●



"When I was 18, I had to give up models so I could concentrate in college, in order to get into business school, so I could get a good job, so I could take Thursday afternoon off to build models."



FULL SIZE PLANS AVAILABLE - SEE PAGE 64



PHOTOS BY JOHN ORBAN

# BANTEE

A low-cost R/C sport model with lines and flying ability of the big and expensive pattern ships. Features a diamond airfoil, tandem landing gear, and can be flown on 2 or 3 channels. By JOHN CHAPIS.

● Are you a sport flyer who has run the gamut of 2 and 3 channel aircraft? Are you looking for something that will fly like the big competition ships but will also fly with the economy of your .19 powered sportsters? If the answer to these questions is "Yes," then the Bantee is the ship for you.

The Bantee was designed for those of us who would like to fly the big hot ships, but can't really justify the additional expenditure for just Sunday flying.

The original idea was to give you a chance to use your old C/I engines with a 2 channel system. But it will still handle up to 4 channels with ease.

The lines followed are those of Jim Martin's famous Banshee, but several ideas were incorporated to keep it a simple but rugged design. First, the box type fuselage and sheet surfaces reduce building time and ease the construction for the not-so-experienced builder. Second, we've incorporated a diamond-shaped airfoil that allows the wing to be built inverted on the work bench. This doesn't sound like much, but the time required to have the prototype covered and ready for radio installation was only six hours.

There are several ways in which the Bantee may be constructed. One way is as shown on the plans. But for those who aren't quite ready for a ship without dihedral, add about 10 degrees total dihedral as I did on my father's ship.

Also, because of its compact size, the ship may be built in one piece.

## CONSTRUCTION

Basic construction of the fuselage follows normal building practices. However, for those of you who enjoy hollowing and sanding blocks of balsa, you can replace the beam mounts so as to use a radial mounting system. Now the fuselage is finished. Insert the stab but do not glue until the wing is complete.

The wing construction is very simple

and I suggest that 48 inch stock be used throughout to prevent any unnecessary joints. Use a very hard piece of balsa for the spar. If spruce is available to you, it could be used to eliminate the fiberglass reinforcement in the center section.

Mark the rib spacing on the spar. Install center and tip ribs. Place on a flat work surface with the trailing edge and spar tacked firmly to the work surface. Now complete the installation of ribs



Author/designer John Chapis and the baby Banshee. Note tandem gear and tip wheels. An inexpensive way to practice pattern maneuvers, Bantee uses 3 channels and a .19 engine.



Taking an idea from ukie combat flyers, who have to build quickly, inexpensively . . . and often, John used a diamond airfoil on the wing so that it could be built in one piece, upside down, on the workbench. It has shown no bad characteristics and is stable at slow speeds.

and sheet the bottom portion of the wing. After it dries, remove the wing from the building surface and plank the top section in the same manner. Add tips and fit ailerons. Do not install ailerons at this time.

Next, fit the wing to the fuselage and check alignment. After alignment is complete, glue the stab and add the fin.

Now the basic structure is complete. Sand and cover your craft to meet your own specs. I would recommend the use of Monokote to keep it light for best performance. After the ship has been covered, install the elevator and ailerons.

The original Bantee weighed in at 3 pounds with a Kraft KP3S system, KPS-12 servos, 500 MAH batteries and OS .20 with a 6 ounce tank.

Now you say, "With 3 channels how do you get the nose gear to work?" Well, study the picture and it should answer any questions about linkage. OK, now you say, "It should work, but how well?" I feel it works better than some trike jobs I've had because of the added drag of the tip skids. So, this is your job to decide between tandem or trike. But, remember that with trike you've got more drag while buzzing around the sky than if you have tandem gear.

Enough idle chatter. Construction is simple and the plans and pictures should show you all that you need to know. But what about flying? How simple is that? Having no dihedral in my version, this bird stays where you put it. Landings are the same as most small planes and no bad stall characteristics are evident. As far as stuntability when using 2 and 3 channels; with a little practice

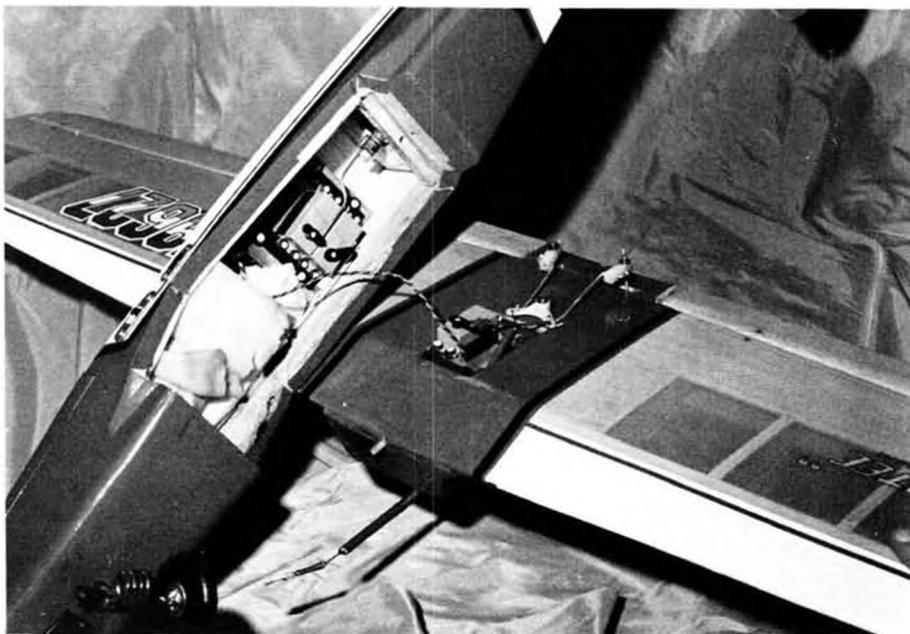
and using the wind to your advantage, you can do the full pattern.

If you are worried about low speed stability and you need more convincing about this ship, let me tell you how I shook the boys up at the local flying site. An old Eastern Shore flying buddy of the editor, Cliff Morris, was bugging me to get the Bantee into the air. Because of the tall grass, however, I could not get off the ground for hanging up the nose gear. So, I chopped the throttle and walked out to the ship, picked it up, and with Joe Namath style, chunked it into the air. Cliff's face was white

as a sheet because all he could foresee happening was a big snap roll into the deck!

Let me add a closing note to those contest minded flyers who would like to build the Bantee. Fully sheet the wing, change the tail surfaces to 1/4 inch sheet and add 4 channels, with no more than a .35 for power.

I hope you have as much fun with your Bantee as I have had with mine. If you have any problems, feel free to write me at P.O. Box 187, Denton, Md. 21619. Happy Landings! ●



Since rudder is not used, steering linkage for nose wheel must be connected to the aileron servo. There's room to add rudder control if you want it, but it's not necessary.



# PYLON

By TOM CHRISTOPHER



This month we introduce Tom Christopher, who will cover all R/C Pylon racing in this column. A competitor in Formula I and Quarter Midgets, Tom is an airline pilot and for many years, raced outboard motorboats; a newcomer to pylon racing, maybe, but certainly not an armchair philosopher!

● RACE . . . Since that word means something to all of us who participate in this fast moving sport, I would like to elaborate slightly on this subject.

I consider myself a newcomer to Pylon racing with only one year of active participation behind me. So speaking as one who likes to compete . . . here goes!

During the last year I have read numerous articles stating: "Pylon racing has become too fast and unsafe," "Let's slow them down," "The cost is astronomical," "Rules, Rules and more Rules." As one entering this sport, I

was quite amused. How can one RACE and compete without the never ending search for speed. RACE means speed along with a combination of many other things. I don't think it is right to ask a *real competitor* to slow down! Personally, I don't think any phase of pylon racing that we now have is too fast. I would like to see our safety rules and regulations enforced a little better. One example, is hazardous flying over the pits and spectators. I have yet to see anyone disqualified for flying over these areas . . . threatened "yes," but disciplined "NO."

RACE . . . If someone beats me, he must be illegal or cheating . . . BULL!! A real competitor doesn't make excuses, he just puts it all together a little better and does something about it. Preparation and practice are the key words. That word RACE is always there.

The Formula I season should really be something else this year. I expect to see a number of new birds, such as Stafford's "Rickey Rat," and probably a few new designs from Ed and Joe Foster, seriously challenge Chuck and

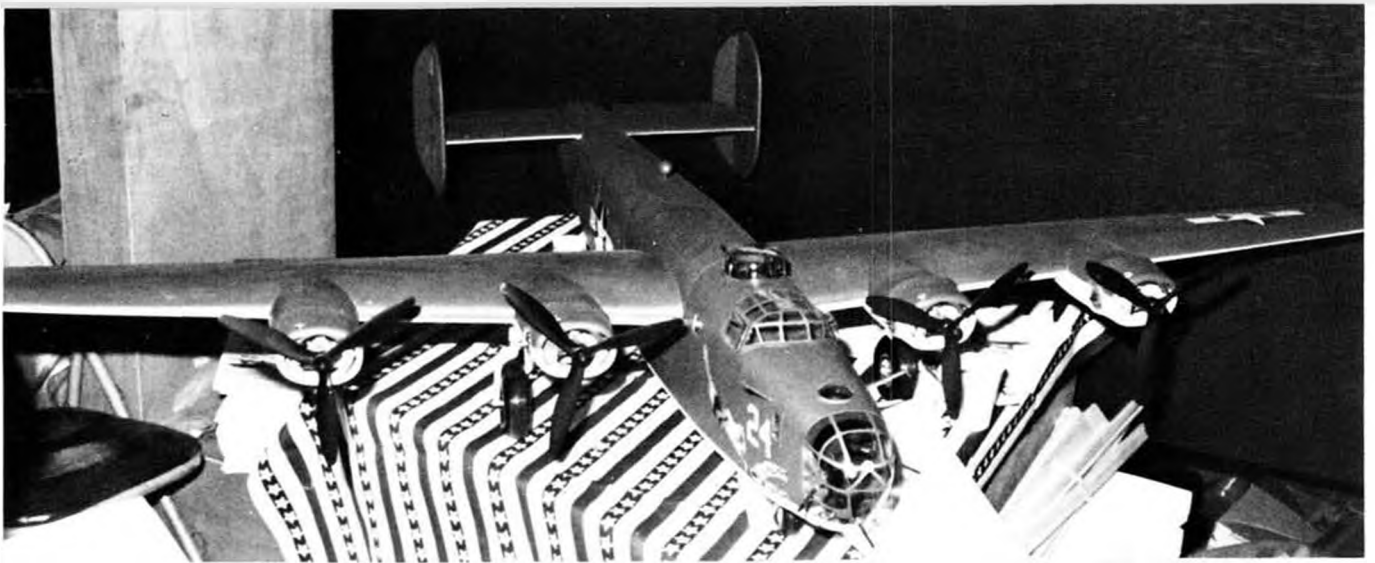
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Quarter Midget and FAI Stafford P-51's. From this angle it's not too easy to figure out which one is which!



Stafford's new Formula I "Rickey Rat" has been clocked at 189 MPH on the straightaway. This is his drawing board.



Jack Stafford's B-24, built with Sonny Meyers' assistance, was finished just in time for Toledo. No, he's not entering it in FAI Pylon!

# RADIO CONTROL REPORT

By FRANK SCHWARTZ

● Last month we mentioned Toledo and the array of R/C goodies that are usually seen there. This year was no exception!

Aside from the fact that people were packed in like sardines in a can and that the booths were literally overrun with lookers, handlers and feelers of all the planes, engines, and gear to be looked at, handled and felt of (as we say down in the country), it was just super-sensational.

As far as winter goes, we consider it the R/C highlight of the bleak winter months . . . not only does it give us something in the hobby to look forward to in the middle of winter, but it has so many new and interesting items to be seen, and delivery to the hobby shop to be anticipated, that it spurs in-

terest for many, many months.

It would be impossible to tell about everything seen . . . there was too much, but we'll try to give you some of the highlights that we think will interest you, and maybe gloss over some of the items that were slanted just for the competition flyer. We still feel that the sport flyer is the large majority and your interests are what we were looking for at Toledo.

To all the manufacturers who took the time to tell us about their products, we want to especially thank . . . many were old friends . . . and it was nice to make some new ones as well. Also had the pleasure of bumping into many old friends just milling around in the crowds.

There was a little more room allot-

ted to booths this year, but still more space is needed. Over in the expanded area which was previously used for seating at the hamburger and hot dog stand, were many new booths and lots of new products. Du-bro had their complete line there and their new big helicopter was introduced. We haven't tried our hand at helicopters. Would like to, but haven't yet taken the plunge.

Saw a very nice trainer at Jack's Custom Model Inc. booth. It is called the Primer. Sells for 25 bucks and is introduced as an easy-to-build, easy-to-fly Basic trainer for beginning flyers and builders. They told us to take one home and build it and fly it. So we're in the process of building it right now. Good balsa and good readable (that means they make sense) instructions. Builds up into a nice flat bottom high wing plane of 56 inch span. You can use from a .19 up through a .25 and Duke Fox's 19 or 25 RC engines would be ideal. We're very pleased with the kit and are enjoying building it. All balsa is cut . . . not crunched, and so far, everything fits just right. They also offer a special wing kit for you so that after you learn to fly the Primer you can substitute an advanced wing which features a semi-symmetrical airfoil with ailerons . . . and it's completely interchangeable with the original wing. Nice idea. They also have other kits, such as a low wing sport plane called the Advancer, along with floats, and a stand off scale kit of the Ag-Wagon. Suggest you write them if you are interested in a nice all balsa trainer kit. Jack's Custom Models Inc., P.O. Box 266, Avenel,



Trophy winners at Toledo using Orbit equipment (l to r): Bob Brown, Dave Gierke, Basil Derrough, John Simone (John Jr. also won a trophy by proxy), and Orbit owner Charles Speer.

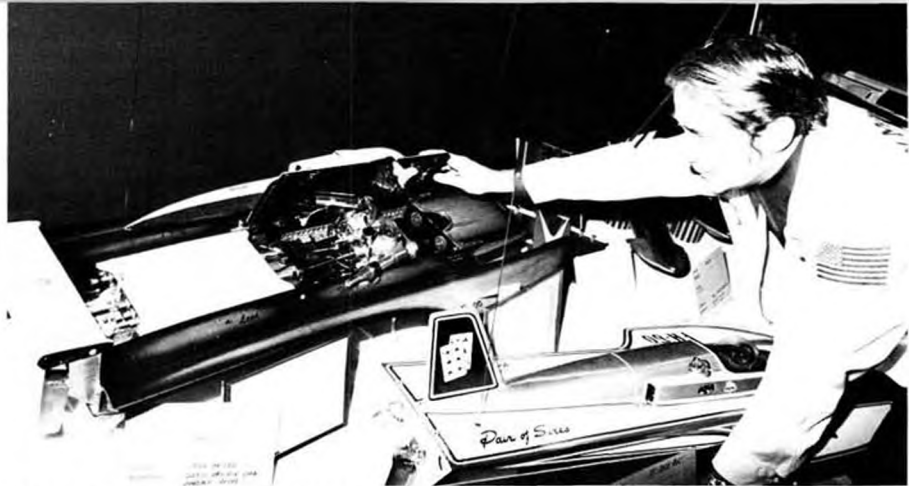
N.J. 07001, or at your dealer's.

Incidentally, we plan to Monokote this one . . . love to dope and silk but this plane builds up fast and Monokote will get it finished much quicker.

Saw old friend Len Purdy of Lanier Industries. Len had two new ones. One was a sleek low wing sport type plane called the Invader, and they engineered this one to fly on a 25, although you can get by fine with a 19 or scorch around with a 35 or 40. Span is 55 inches. Then they have a very nice looking sport type plane with a high wing called the Sprint 25 . . . again 19 to 35 engines will do fine. Span is 50 inches, and you can fly the Sprint 25 with or without ailerons. More info from Lanier Industries Inc., Oakwood, Ga. 30566. If you write, tell Len we sent you! These are plastic ARF type planes and will get you in the air fast if you are short on building time.

Also was surprised to find that Lanier Industries was selling most sizes of balsa at real good prices. To quote them: ". . . the wood is OK and the price is right!" You can write for prices and order form.

Tidewater Hobby Enterprises of 103 Bannister Dr., Hampton, Va. 23366, had the nice little Pronto kit on display. This was done in one of the magazines and had good acceptance as a trainer-sport plane . . . it's a tail dragger and



John Bridge lifts the lid to show the twin ST 65 ABC's in his 17 pound "Lead Sled", which holds the Class F speed record at 70.533 MPH.

has a low wing . . . nice little plane; kit looked good and the price was right at \$18.95 . . . at most dealers, too. They also have an advanced version of the Pronto due out any time with ailerons. Then, to our amazement, they had a kit for the Square Shooter, another popular design that builds up super fast . . . good for sport flying. In fact, a couple of years ago we framed up two of them completely from scratch over a weekend. We flew them on just about everything from .19's to a Wankel . . . Super simple to build and a good sport flyer without a lot of construction frills.

At the booth of R/C Kits, 353 Briar, N. Canton, Ohio 44720, Bob Campbell showed us his slick, sleek Hunter and F-86, along with the Super

Hunter and a beautiful quarter midget Bearcat. But what caught our eye was a U-2!! This was their version for full house control . . . they state that it is a transitional trainer, good for stand off scale (it really looks like the U-2 but with a shorter wing) and fine for Sunday flying pattern types.

Then to visit Johnnie Casburn and see his nice planes. Johnnie's planes feature mostly preassembled balsa fuselages and foam wings covered in plastic sheet. He advertises "buy on Monday and fly on Sunday!" and we're inclined to agree. Have one of his Big Lucky Fly's and it really flies fine. Johnnie had a Little Super Fun Fly for engines 35-50 range and a Big Super Fun Fly for engines in the .60 range. Looked especially



"There, see how easy that is?" Sid Axelrod demonstrates Monokote for the umpteenth time.



Claude Meyer holding Heath Company's newest, inexpensive single stick unit. Transmitter case is a radical departure, very compact.

good for the sport flyer and you can get poop from him at Johnnie Casburn Manufacturing Co., 5821 East Rosedale Ft. Worth, Texas 76112.

Of course, all the radio manufacturers were there with their new models. Kraft had a number of new models, servos and other goodies; Pro-Line had a new radio along with RS systems, Royal, RC Manufacturing, Cannon, EK and MRC. MRC had a totally new one they manufacture here in the states. It's eight channel and carries a one year guarantee. RS systems also has an interesting guarantee. They unconditionally guarantee the radio for 90 days, no matter *what!* If it fails, you can send it back telling what happened and they will fix it at no charge except postage and delivery expenses. Not bad.

World Engines had a new radio in a gold case with a most interesting carrying handle/stand gadget.

Ace showed their pulse system along with their Commander digital kit which will soon have an expandable transmitter to match their receivers 8 channel capability. Ace also had some interesting kits for the pulse rigs and the flyer who likes smaller planes.

Hobby Lobby International was on hand with their Senior Telemaster . . . a whopper of a plane, and they tell us they are killing themselves trying to take care of the orders for this one. Almost overlooked by most modelers is the standard Telemaster . . . just like the 96 inch one but about 72 inches. If you drive a compact maybe the regular Telemaster will fit in it . . . the Senior Telemaster won't! R/C Modeler reviewed it last month and they liked it. (Who? wcn)

Speaking of other magazines . . . in Model Airplane News, Art Schroder took note of our literary efforts in his R/C column. Thanks for the good word, Art, as well as your encouragement!

Also, almost unnoticed at Toledo among all the planes and such, was a booth that featured printed shirts, jackets and patches . . . and you can also get printed Tee shirts as well . . . all in many colors, and most reasonably priced. If your club or group needs jackets, shirts or patches you might write to Fagel Brothers, 3930 Pinegrove, Chicago, Ill. 60613.

Found a most interesting carburetor at Toledo. It's made in Canada and is patented; fits most medium to large size engines and has some most unique features. It's called the "Tarno-Carb" and boasts the following: Throttle Lever Override: this is an adjustable clutch that also allows the throttle lever to slip on overtravel . . . minimizes servo linkage installation. Manual throttle lever:



Tom Perzentka and son at the Octura booth. According to the sign by his head, Tom must be more delicate than we thought!



Roland Boucher, Astro Flight's president, chats with Carl Maroney of the ECSS. Twin electric powered ship in foreground is based on AS-W17 fiberglass fuselage.



"Pssst! Between you and me, RS Systems has the best radio in the business. Don't spread that around . . . much!" Dick Kurek lays it on an interested listener.



This means the throttle may be easily adjusted by hand from high to low motor and back again without the radio being switched on. Also you can take the throttle apart without losing your needle setting. It uses the true automotive type butterfly, with high and low speed jets . . . rather than the rotating barrel and needle valve found in most R/C engines. Quite a remarkable throttle. We got one for our Webra 61 and it's something else. You can get info from Strato Model Products, Route 6, Blakeley, Penn. 18447. Strato also has some nice balsa kits for sport planes and a trainer. Their kits feature some interesting construction ideas: In the fuselage, the formers lock into the backbone to make sure it is true . . . in the wing, the leading edge locks into the wing ribs to make the wing warp free.

All this and so much more to be seen at Toledo. It really is hard to try to get it into one story. In later issues we'll touch on some of the other items seen there.

Joe Bridi, of Bridi Hobby Enterprises, had his new Super Kaos, along with his Basic Trainer, and he told us he plans a .40 size Kaos kit soon. He was nearly floored to learn that O.B. Stewart of Nashville has been flying scaled down versions of the Kaos with a .40 for the past two years.

In closing we thought we'd mention seeing another old friend from Lexington, Kentucky at Toledo. That's Bill Suvanto. Bill's not easy to miss as he is a rather large type man. Last year, just before Xmas (that is in 1971), Bill began to feel bad and after many check-ups, his doctors told him that he was dying of an incurable disease and didn't have long to live. Poor old Bill got rid of all his planes and R/C equipment, got his affairs in order, purchased his cemetery plot, and then went home to wait for the inevitable. However as the weeks went by Bill, didn't feel any worse . . . He went back to specialists and found he wasn't dying after all, and soon recovered.

When we saw him at Toledo last year he had just "joined the living" and was the happiest man we ever saw. On greeting him he said "I'm so glad to be here," and then he explained just exactly what he meant. Sounds funny when you tell it, but old Bill is just about the happiest man around . . . back to modelling and living and enjoying every minute of it. This year at Toledo he said "I feel so good, I just gained 40 pounds!!!"

"Be happy, Bill, old buddy."

Last issue, we saw where the Great  
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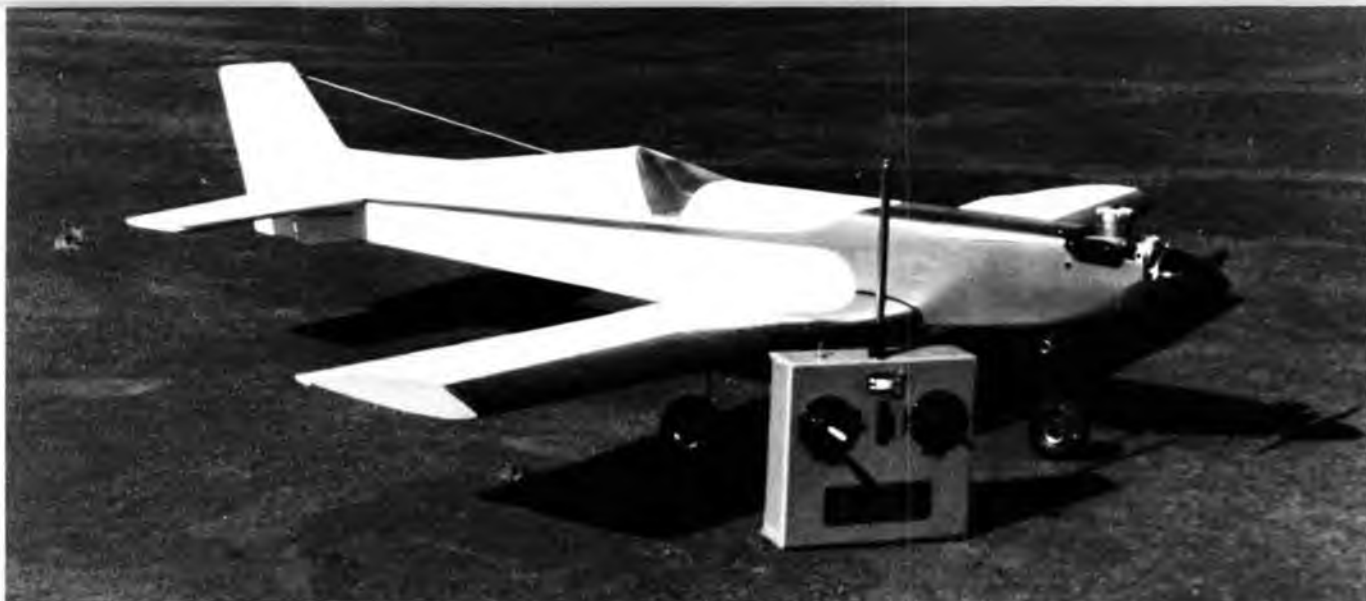
"People in glass helicopters shouldn't . . ." A mysterious hand emerges from behind Graupner's display chopper. Fred Militky, Graupner's engineer, gives an "Oh yeah?" look at Frank Garcher.



Sid Morgan, of Vintage Plans, looks up from his steady work at the Toledo show. Snoopy peers from the cabin of VP's 9 foot J-3 Cub.



Dan Pruss (left) and Neil Liptak manning the Su-Pr-Line booth. Both are R/C glider specialists, and Dan will again CD the Soaring Nationals this year.



## PRODUCT\$ IN U\$E

JOHNNIE CASBURN LITTLE SUPER LUCKY FLY, by Fernando Ramos

● Many of you may be wondering what a F/F scale nut is doing writing a product test on an R/C pattern ship. (*You explained it . . . you're a nut! wcn*) Well, just to give you a brief background on how this came about; I am very interested in getting into R/C Scale as another aspect of scale competition, and in order to accomplish this, practice with non-scale models is a must. I started in gliders several years ago (LSF 123), and more recently, power. The transition from gliders to power was done with a Procter Antic. This model is an excellent trainer because of its

slow, docile, stable, and forgiving characteristics. However, the Antic is a far cry from the rip-roaring, relatively fast pattern ship.

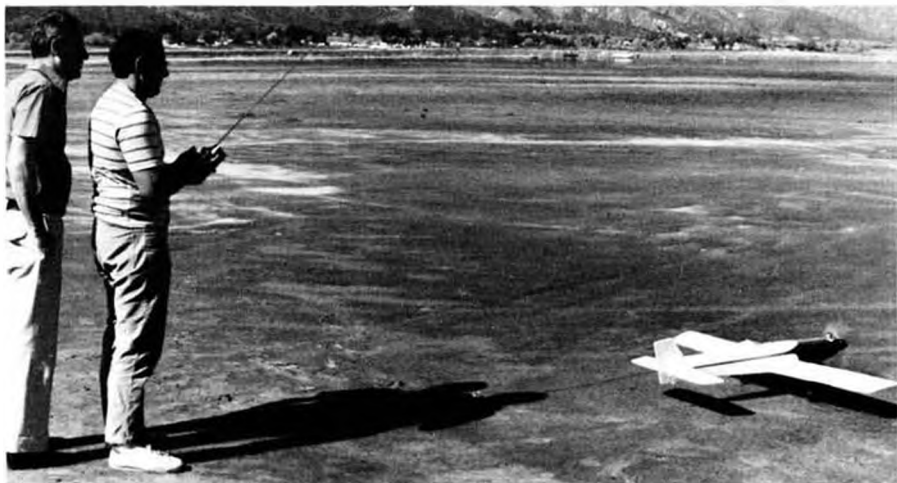
The question is which pattern ship do you build? While at the Nats last summer, Johnnie Casburn was explaining his new ARF models to me. The more he talked the more I was convinced that this was the type model I was looking for. Johnnie had mentioned that there was more testing and developing to do but the prototypes were far above his expectations, and as soon as they were ready for kitting, he would

send me one.

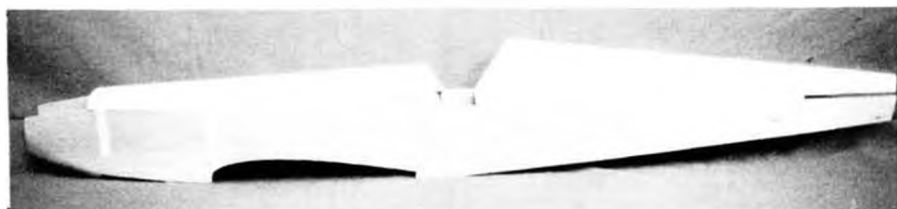
What constitutes an ARF kit? I've looked into the boxes of many so called ARFs, and the degree of completion certainly varies from kit to kit. The Johnnie Casburn Little Super Lucky Fly is an excellent kit. It comes in a box large enough to store scrap balsa for years! The wings have a full depth spar, are cut from foam, and are vinyl covered. The vinyl is applied to the wings with a specially formulated adhesive that really works. The fuselage is 95 percent balsa, and is totally framed as it comes out of the box. Johnnie's philosophy is that in order to have a good performing model, it must be true in all respects. So, all the fuselages are actually built on a jig at the factory and come with the nose gear bracket pop-riveted to the firewall. The engine mounts and carved nose cowl are all glued on. The upper front-half of the fuselage is a ready-carved balsa block that is permanently mounted during construction. The turtle deck is cut from foam and covered with a smooth, heavy paper. The tail surfaces are made from solid sheet balsa, with the elevator and rudder machine tapered, as well as the full-span ailerons. The instructions come in the form of a manual complete with a series of pictures, which makes construction a breeze.

The first step in construction is to put the two wing halves together using plywood dihedral braces and a slow curing epoxy. (The fast setting epoxies are not advisable due to the excessive heat generated in the curing process which may cause breakdown of the

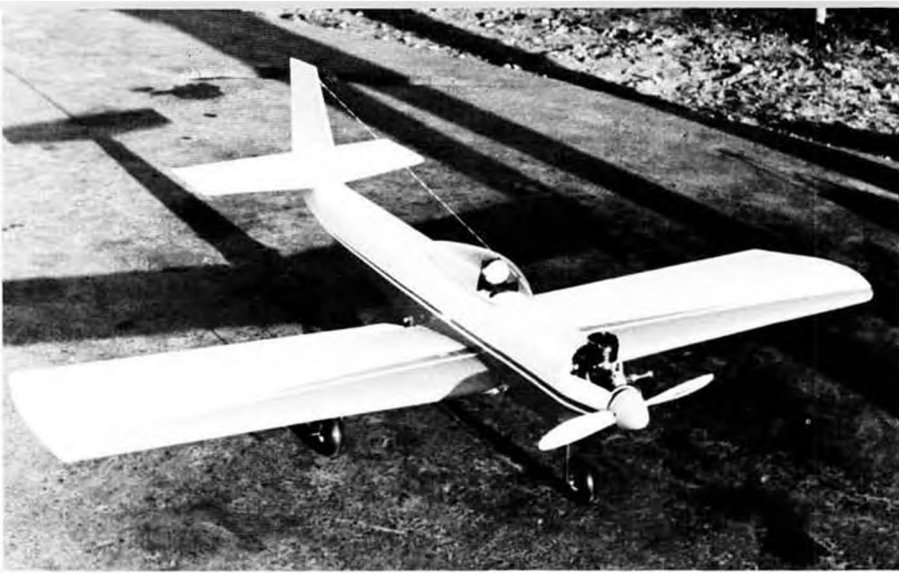
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With Art Briggs breathing over his shoulder, Fernando starts the takeoff run for his first flight with the Lucky Fly, controlled by the Kraft KP-5 Sport Series radio.



This is the way the fuselage comes out of the box. Nose and cowl blocks are ready carved from balsa, rear deck is foam with heavy paper covering.



# PRODUCTS IN USE

**AIR CAPITAL'S FB-100 AND THE 1973 MICRO AVIONICS, by Jerry Fitzgerald.**

● "Price is no object" is often heard at the flying field and at the lakes, tracks and slopes, for that matter, and it's true to a certain point. Point being, your new baby that you've built, sanded, filled, aligned, covered and etc. is on the line and ready to go. The crowds' entire weight is on your neck, there is a wind that you don't really like, your hands shake a little (after all these years), and nobody else is flying. The model community awaits with quiet respectful anticipation and off you go to "prove the pudding." The last thing you want at that time is RADIO TROUBLE. Any misgivings you may have had during the decision to buy Brand X, Y or even \* are now brought home to you and you think, "Maybe I should have gone first cabin." Well now, listen to this . . . \$299.50 will dispel all of your fears and give you a rig that will ease your burden on that first flight and maybe you can enjoy it a little more. And to those who say, "Price is no object," I say fine, get the best, and you can, for \$299.50. This 1973 Micro Avionics (Orbit's cheapie) has the same electronics as the 'high priced spread' but in a box that isn't super dramatic looking. How are they

going to sell the Orbits now that the Micros are available?

If the reader would like to know some facts about sensitivity, transit time, band width and all that scientific jazz, I refer them to RCM November, 1972. Said article is Orbit's spec sheet set in prose form and covers all electro-mechanical aspects.

Now, when you all rush to your local shops to buy one, keep in mind that the 5th servo, if purchased at that time, can be had for a slight reduction . . . get in there and bang on the counter. It's only money.

A very important thing for a prospec-

tive purchaser to know is Orbit's policy on repairs. You ding your radio and you want it fixed and quickly. Right? Well, how does it make you feel to know that every employee at Orbit who handles your radio, from tuning and alignment when new, to the same procedure for a repair, is a model builder and flyer? Those guys know what you want and they provide it. They TEST that repaired rig of yours just as much after a repair as they do prior to sale.

One of the things that bugs me about warranties is that many guys will buy the model kit, get it half built and then buy the radio (got to fit servos and batteries, etc.). By the time they are ready to fly, the warranty has run out! Big deal! At last, Orbit has made installation kits available, which are empty servo cases and arms and trays so you can go ahead with your plane and glue and epoxy and solder and paint without every getting your Ambroid-coated fingers on or near your new, clean, pure, and unsullied servos (which are still unpurchased)! When at last the plane is ready, out come the dummies and in go the smart ones, in perfect new condition.



The FB-100 makes a low-and-slow fly by for the camera. Excellent flight characteristics.

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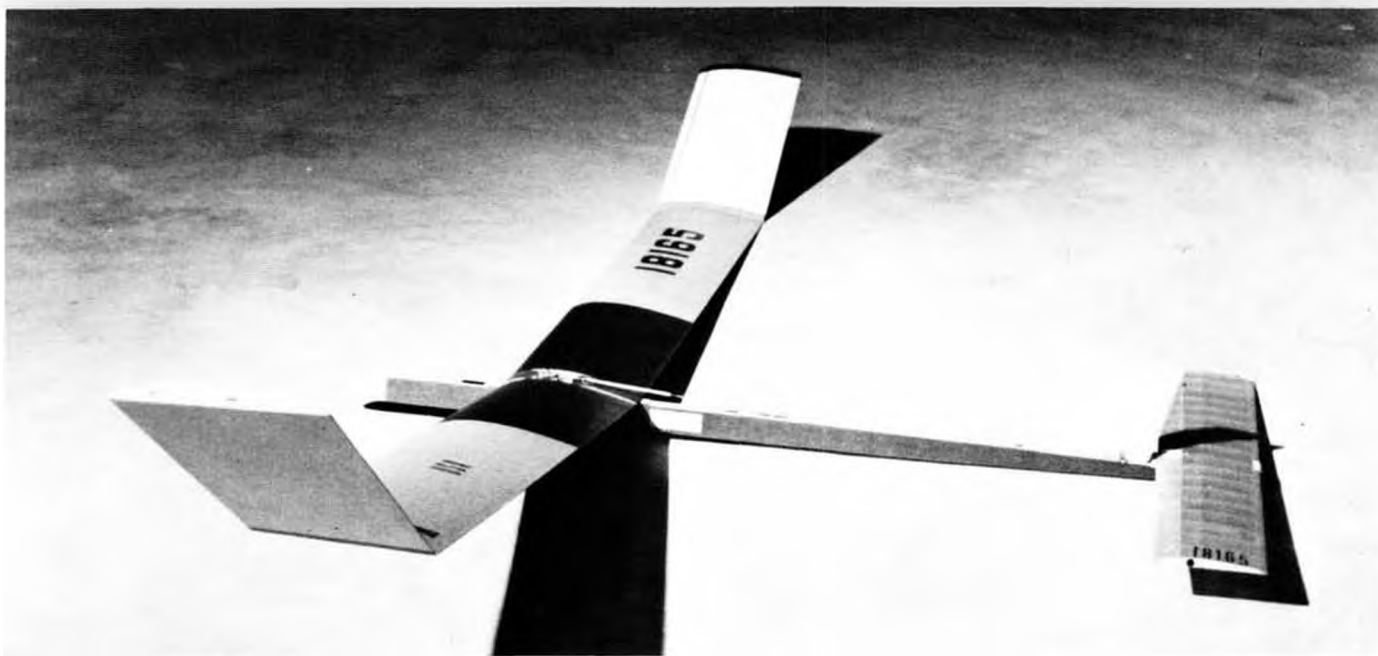


Installation employs the mounting tray furnished with the radio. Dow-Corning silicone rubber liner keeps out the exhaust gook.



Lines of the FB (Fun Bird)-100 are clean and simple. Rolled ply fuselage is strong yet light. Canopy was added attraction.





# WOODWIND A/2

A breakaway from the usual thin, undercambered, fragile, warp-loving Nordic wing is the main feature of this all-sheet design . . . built for normal rather than ideal weather conditions. By JOHN KROUSE.

## DESIGN PHILOSOPHY

Most Nordic A-2 enthusiasts "get their kicks" by building high-performance, "still-air" gliders . . . they are aerodynamically challenging and aesthetically pleasing. Unfortunately, these fragile, sensitive craft seldom live up to their designer's optimistic expectations. Consequently, "Woodwind" was conceived to cope with the *actual* weather conditions which usually exist at most FAI trials . . . namely, WIND! The principal objectives were to develop a model having the following flight characteristics: (1) good gliding efficiency, (2) excellent stability (static/dynamic-longitudinal/lateral), and (3) ability to manipulate fairly tight turns for remaining in the core of small-diameter, low-altitude thermals; and also to keep the glider within reasonable retrieving distance (and timers' eyesight) for all those three-minute-plus flights. In addition

to these rather ambitious performance goals, durability and reliability were essential for FAI competition.

Aerodynamically, a close-coupled layout employing a relatively large horizontal/vertical tail and rudder were selected. Generous amounts of dihedral (both inboard and outboard) and tip washout were incorporated into the rectangular planform wing to avoid spiral dives while "thermaling." Structurally, sheet balsa covered wings were chosen to resist warps and flutter . . . two problems frequently encountered by Nordic flyers (usually with disastrous results). The *spruce* spars are absolutely necessary to prevent buckling!

It is the author's opinion (based on some early British wind tunnel data reproduced in the 1970 and 1971 National Free Flight Society Symposium Reports) that properly designed flat-bottom airfoils glide *almost* as well as

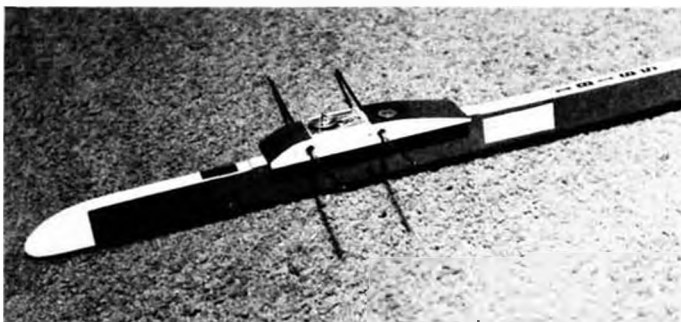
similar undercambered sections, in addition to being less critical to trim for varying weather conditions. So far, "Woodwind's" performance seems to support these claims.

## CONSTRUCTION

**Fuselage:** Start by building the vertical tail/rudder assembly from 1/32 - 1/16 - 1/32 inch balsa ply (see plans for auto rudder details). Then proceed to the slab-sided fuselage, which was chosen for its simplicity and accuracy in aligning wing/stab/fin. After cutting a sheet of medium soft 1/8 x 3 x 36 inch balsa into 1-1/2 inch wide strips, glue the upper medium hard 3/16 x 3/8 inch longeron in place with a slow drying adhesive such as Titebond (used almost exclusively).

Make "keel" from two 3/8 x 3/8 inch pieces of spruce, cement lower longeron in place (leave space for FAI Supply

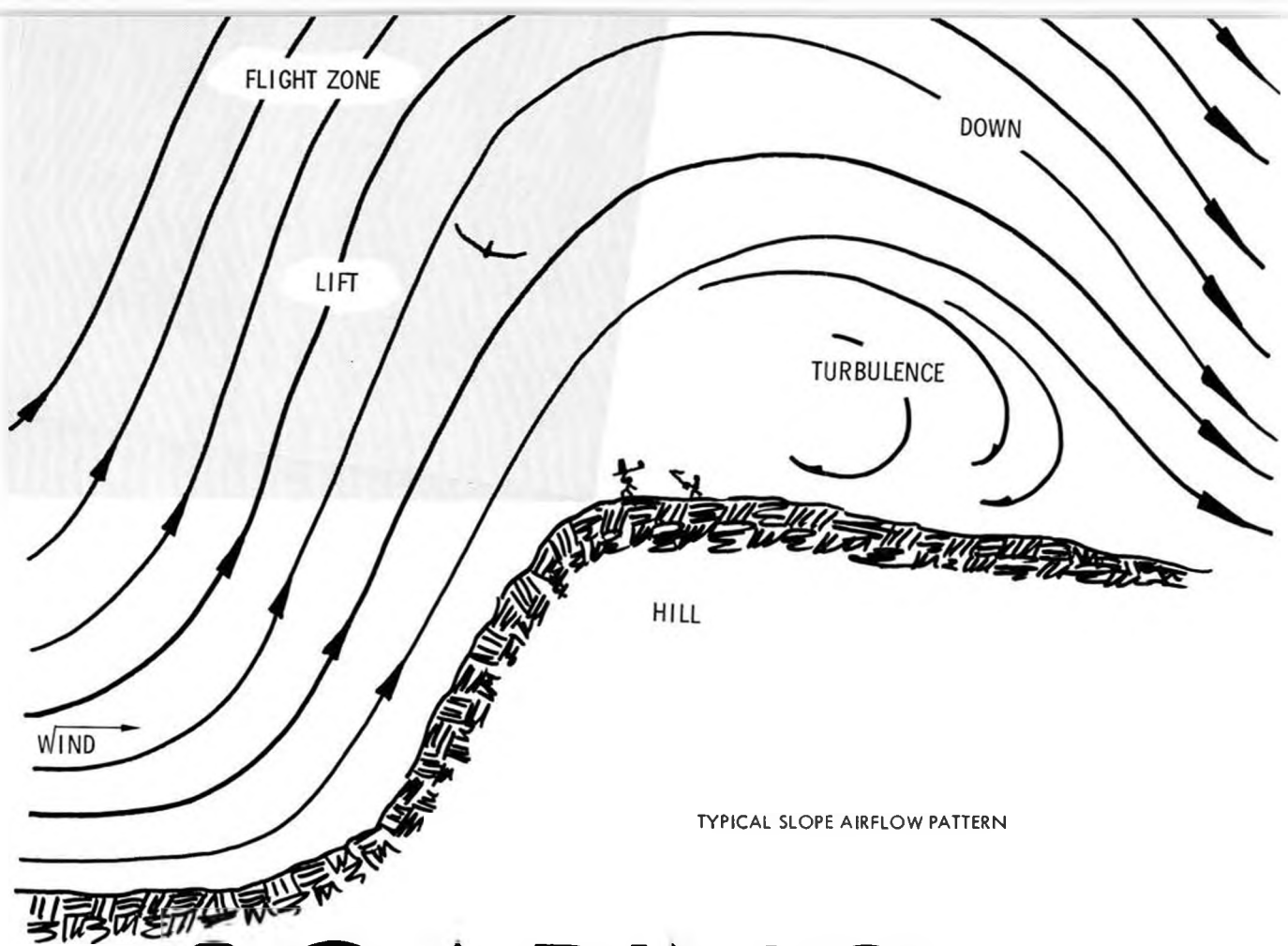
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Earlier shoulder wing model. Top-mounted timer (also on latest version) keeps it out of the dirt. Don't be half-safe, light fuse, too!



Note flat-bottomed airfoil and tip washout. Design is more stable in the usually unfavorable conditions found at a contest.



# R/C SOARING

By LE GRAY

It's up, up, and away ya go . . . and a fabulous view in the bargain. Our Soaring editor wishes to point out that all lift does not come from hot air . . . and he ought to know!

● There are devoted sailplane enthusiasts among us who are fairly well convinced that the Thermal Hunting Clan is just a bit on the rocky side . . . that anyone so mentally feeble as to spend hours sunburning tonsils while searching for some invisible body of gas has got to be a little weird. Why, they reason, should any intelligent human go to such trouble as to flat-land soaring enthusiasts for so frequently small . . . or at least brief . . . return? These Doubting Thomasi are Hill People . . . Ridge Runners . . . Slope Soarers. Their answer to the hot-air exercise? Fling it off a cliff, instead.

Slope soaring sportsmen are died-in-the-silk, I-land-only-when-I'm-tired, wind-burned, and/or slightly frozen, rugged individualists. They are the pioneer stock of R/C soaring in the U.S. Many logged hundreds of soaring hours long before the first winch was built or hi-start stretched within the contiguous Forty-Eight.

But before a Them-and-Us syndrome sets in, let it be recorded that there's

room and reason for all. Somebody famous once said, "There ain't no bad . . . just good and better." Or words to that effect. Sure is true with R/C soaring. There ain't no bad. Just different. And maybe not so different at that.

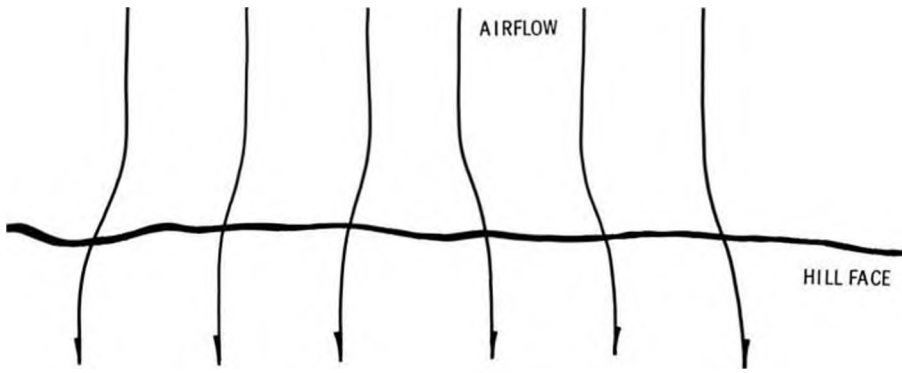
With the current and fantastic growth of R/C soaring, most sailplane flights are now launched by Flatlanders. The once predominant Hill People are now a minority, but many still contend . . . and rightly so . . . that there are real attractions and advantages to slope, ridge or hill soaring. Maybe Flatlanders should be exposed . . . at least verbally . . . to some of the reasons that some Hill People still see no point in coming off their lofty perches.

The basic difference between thermal and slope soaring is the type of lift involved. Whereas thermal lift is quite transient in nature, ridge or slope lift is an almost stationary phenomenon . . . at least when it exists at all. As long as the wind blows from the proper direction and with adequate force, a good

hillside can provide flight sustaining lift. Day or night . . . Day and night.

Stop and think for a minute. Or, as the "in crowd" might say, let us reason together. In what other aspect of the model flying sport can one here the cry, "Wind's up. Let's go flying?" Certainly a strange twist to most modeling experience. Sounds almost un-American or something. But that's the way it is with slope soaring. Wind is wonderful. At least, within reasonable limits.

Sailplanes, with their light loadings and large wing spans, are usually quite susceptible to the vulgarities of wind . . . horizontal wind. But slope soaring utilizes vertical wind. That is, slope soaring depends on wind that has been deflected upward by a topographic incline and is thereby blowing uphill. As the term implies, slope or ridge soaring is practiced high on a hillside or at the top of a bluff, by flying out on this vertical lift component of the upslope wind. Just as hawks, eagles, gulls and other large-winged creatures have been doing for some time now. Literally,



FLAT HILL FACE FORCES AIRFLOW UP AND OVER.  
PROVIDES GOOD LIFT.

slope soaring can be compared to flying in a predictable, standing thermal. It's the perfect complement to thermal soaring. When lift is too weak or wind is too strong for flat-land flying, head for the slope.

One of the more attractive facets of slope soaring is that it can provide a close-in flight path. With only limited experience, most pilots can maintain a course that is little more than a few wing spans away from hillside. No speck in the sky. Bring it in close and see how it looks. A fly-by or "buzz" job need not be followed by a landing. It's the normal thing. Push the nose down for a fast pass and see a practical demonstration of flight at zero or even a negative angle of attack. Fascinating. Aerodynamics do work. Yeah they do.

Another big plus for the slope is the easy "stick time" it offers. Perfect for the newcomer. He can get more flying time on a single afternoon at the slope than in a couple of months dumb-thumbing on the flats. It's great practice for anybody. A sailplane can be operated low and close so that the pilot can actually observe his flying technique. Unfortunately, so can everybody else. It's soon obvious why marginal thermal lift is lost so often . . . with the lack of finesse displayed by most of us. But then the results of poor control manipulation can not be seen at the height and distance of most thermal rides. So how's a body to know?

With the slope's lift component defined as wind sweeping up a hillside, some Flatlanders might doubt its real useability . . . and availability. It might be suspected that flying would be restricted to a relatively small air space. Not so. Each site varies . . . as does the local lift . . . but at a good location and under reasonable conditions, slope soaring is everything but confining. Maybe even less so than thermal soaring. Remember, you usually don't land until you're just plain tired of flying. Few

thermal days are that good.

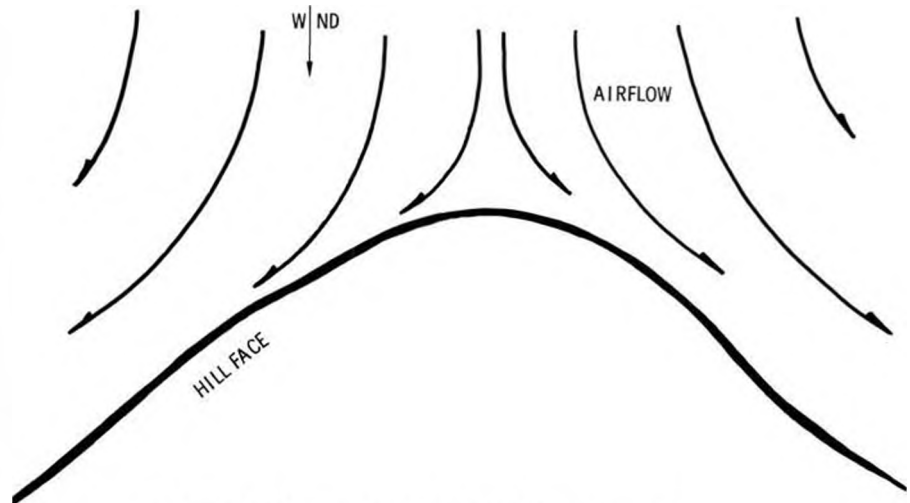
On the slope, a Figure-8 flight path, just off the face of the hill, is a fairly universal pattern. The idea behind this path is basic and sound. It keeps the sailplane in close where the lift is most likely to occur until careful exploration verifies wider margins of supporting air. Further, it allows for all turns to be made away from the hard soil . . . which in itself is a near absolute rule. With this standard pattern, all traffic knows that all other traffic is doing, or is going to do. But under good conditions . . . when solid lift is not limited to the area immediately adjacent to the hill . . . individual flight patterns can vary whims of the pilot. As long as the sailplane is kept upwind of the cliff . . . out in front of the ridge, that is.

Of course, there's a catch. Horizontal wind that has been diverted to vertical lift . . . just for the convenience of R/C sailplane enthusiasts . . . has got to get horizontal again. Sooner or later. In most cases this happens fairly soon after the air passes the top of the cliff. Actually, the air tumbles or burbles over the cliff, in a manner similar to the flow over a wing airfoil that is approach-

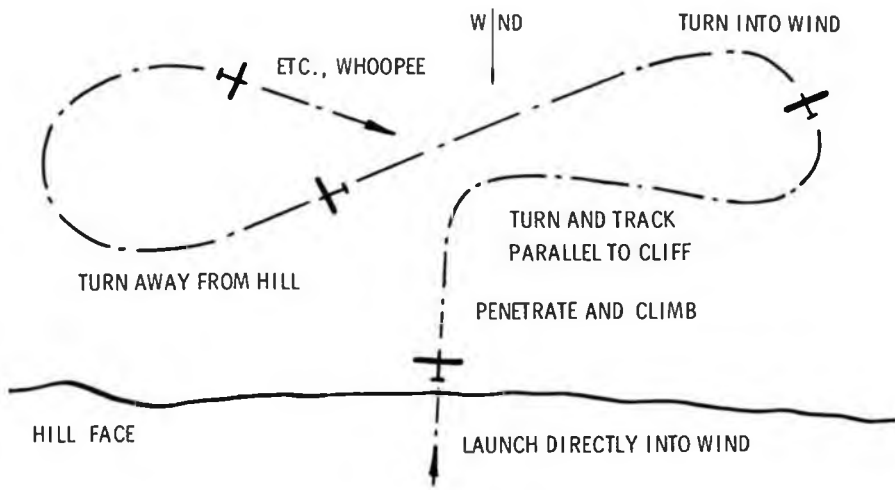
ing a stalled condition. Once over the top, the air then rushes downward behind the hill as it seeks its more normal path . . . horizontal. The best way to visualize this is to fly a sailplane back behind . . . downwind . . . of the hill. You'll see sink like you didn't know existed. If you're lucky, your sailplane might not even end up in many more than a dozen pieces. Sooner or later about everybody "loses" one behind the ridge. Delay it as long as possible. Be content to watch others do it dumb.

Once sucked in . . . too far back of the hill . . . nose-down-for-speed is about the only possible action for recovery. If there's not enough altitude to give up to get the speed necessary to penetrate back to safety before sailplane-eating rocks and trees do their thing . . . well, hell, ya shouldn't a been back there anyhow.

Just for the record, it might be noted that this ridge soaring stuff is not unique to R/C soaring. For many years, such activity was also the mainstay of full-scale soaring. In Germany, many world startling glider flights were launched on the Wasserkuppe, a famous mountain site, during the mid 1920's. The early 30's introduced similar action in the United States. A glider school was established on Cape Cod for the summer months of 1929 and 1930. At about the same time, the Allegheny Mountains were first utilized for the soaring sport. Hawley Bowlus was doing it on the West Coast. In December of 1931, an Army pilot, William A Cocke, Jr., made a flight of more than 21 hours over the Pali, Honolulu, Hawaii. With a passenger, yet! That particular mark still stands, as it was never topped up to the time that the duration record category was abolished as a national record category. Too bad they did that.



CURVED HILL FACE PERMITS AIRFLOW TO DIVERT AROUND PERIMETER.  
PROVIDES LITTLE OR NO LIFT.



Matter of fact, it was as recent as 1930 when the first soaring flight was made wherein the principles and potential of thermal lift was recognized. The flight was logged by Wolf Hirth, the famous German sailplane pilot/designer, at Elmira, New York late one evening in a condition of no wind. For some years afterwards, the whole idea was referred to as the circling flight principle of lift. Or thereabouts.

But back to models . . . just thought you might like to know that other stuff.

A good slope can be a real boon to the scale model fan. Where else can he see airborne rivet detail? He can also keep his sailplane in the air long enough to get flight pictures.

Sloping . . . careful not to spell that with two p's . . . offers an aerobic potential to the world of R/C sailplanes. A properly designed and equipped glider can offer performance comparable to a power pattern ship except for those few maneuvers which require brute, prop-hangin' horsepower for execution. Loops, rolls, inverted flight, spins . . . they're all there for those so inclined. And with a silent-grace and beauty that

can only come from a soaring machine. And all can be performed just out from the edge of the cliff. Right in front of your very eyes, folks, yet perfectly safe from the normal hazards associated with low altitude aerobatics.

For the hot-rods, pylon racing with sailplanes is a real blast . . . though that may be a poor choice of words. The concept is about the same as with the noisy, money-eating power racers. On the ridge, only two pylons are used. Normally, Races begin with a flying start . . . like a sailboat race . . . with all vehicles crossing the start line together. In each heat, sailplanes race against each other, not the clock. Exciting? You better believe it. Yet quiet. You can hear the spectators yell. The flight path is the familiar Figure-8 . . . past, rather than around, the pylons. For a real thrill, get half a lap behind the group you're racing against. You'll meet the competition right at the cross of the coming as you're going. Course you would have the same problem flying a half-lap ahead, but for some reason this situation has never presented itself in personal experience. Either way, four

or five ten-foot span sailplanes coming at you can look like a solid wall. Get high . . . altitude . . . or go low, but best not meet at a common altitude. Some cowardly laggards have been known to close their eyes until their assistant advises that they have cleared the pack.

Whitey and Edna Pritchard and the Santa Cruz County, California, R/C Bees have pretty well perfected this pylon racing thing. It's their big, annual RCM sponsored race each Spring. And worth considerable travel to see. It's all in the AMA rules under Sailplane Task VII. If your idea of exciting sport is a duel with marshmallows, you might



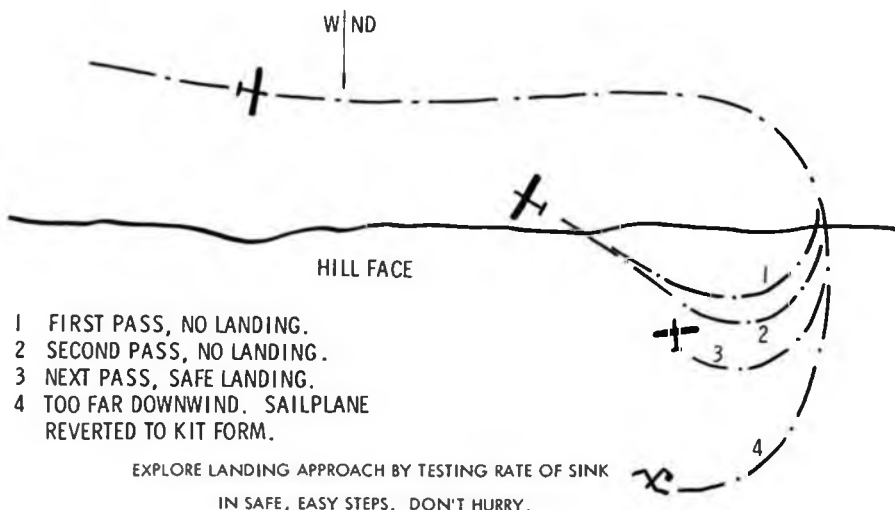
"Clothes to fly in snow by" are modeled by Earl Pell, author of the Snofly article.

prefer the FAI pylon speed event. It's in the book, too. Whoopee.

Except for very light . . . weak . . . conditions, when only thermal-type floaters will hang in there, wing loadings of twelve to sixteen ounces per square foot are quite acceptable. Provides speed for penetration and heft for longevity. Formula 1 pylon racers and full-bore pattern ships have been slope soared sans prop, and sometimes, landing gear. But they look funny . . . and sound silly. No noise. And that sounds stupid for a power plane.

Obviously, the sky is very near the limit insofar as designs, weights and such are concerned. Anything . . . well, almost . . . will fly if the conditions are strong. But let the wind, and thus the lift, drop down to the force of garlic breath, and you got a problem. Most heavy ships go down, and keeping even a lightweight job in the air can be real dicey. Efficiency counts. Skill shows. Most elect to land . . . Immediately.

*Continued on page 57*



- 1 FIRST PASS, NO LANDING.
- 2 SECOND PASS, NO LANDING.
- 3 NEXT PASS, SAFE LANDING.
- 4 TOO FAR DOWNWIND. SAILPLANE REVERTED TO KIT FORM.

EXPLORE LANDING APPROACH BY TESTING RATE OF SINK  
IN SAFE, EASY STEPS. DON'T HURRY.





Happy Junior Class winners: left, Jeff Mrlik, first, and Jason Josaitis, second. They were also second and sixth overall, respectively!



Medal winners (l to r): Dick Chambers 5th, Ray Vandierdonck 4th, Ken Bates 1st, Earl Pell 3rd, and Jack Hiner 2nd.

# SNOFLY

... or, "How cold was my transmitter?" A word and picture report of an annual winter outing (Brrrrr) put on by the Greater Detroit Soaring and Hiking Society. Yup, modelers are NUTS! By EARL PELL.

● The annual Snofly Soaring Meet was a wild idea born to the Greater Detroit Soaring and Hiking Society three years ago. Its purpose was to gather together as many die-hard soaring enthusiasts as possible during the off months. The first year, eleven brave pilots made it to the launch lines. Last year fourteen heroes endured a wild snow storm to make the Snofly. This year we had an unbelievable turnout. The following are my thoughts and comments on this day, February 18, Snofly '73.

The alarm went off at 7:45 am. I went to the window and held my breath. There, coming over the tree tops was that great, beautiful orange ball... the weatherman had been right... finally! It looked like a perfect day for a soaring contest... except for the fact that it was 2 degrees above zero... a typical, Michigan, mid-February morning.

When I arrived at our snow-covered soaring field, I was greeted by a half dozen shivering earlybirds who braved the cold weather; several coming from as far away as Canton, Ohio. By the time the first official launch was made, a total of thirty two sailplane enthusiasts had gathered from three states; Ohio, Illinois, and Michigan.

Art Slagle, the Snofly C.D., briefed the pilots on the day's task. We were to fly a three-round 'cum-max' event. This is the same event flown in last year's Snofly. Competition for this event would be as tough as any contest flown during the '72 season. Top entries included Ray Vandierdonck, Otto Heithacker, Earl Pell, Art Slagle, and Warren Tiahart from the Greater Detroit Soaring & Hiking Society. Dave Burt and Jack Hiner came in from the Chicago area S.O.A.R. club, along with Bob Hicks and Tom Kelley from the Lans-

ing, Michigan C.A.R.D.S. The rest of us, from rookies to old salts, were raring to have a go at the top dogs. Whoever came out on top today would have to put in one hard day's soaring.

Lift was scarce during the first round, with nobody reaching the max of seven minutes. Junior pilot Jeff Mrlik (correct spelling) was tops with 4:10. The wind was light... 4 to 8 mph... but still many pilots had trouble hitting the landing zone. Perhaps the winter layoff was starting to take its toll. During Round Two, with the temperature now up to about 15 degrees, and the sun still blazing away, a few thermals were starting to pop. There were about a half dozen good flights, with Ken Bates and Fred Stephens maxing out, and Jack Hiner coming in just short of a max. Many flyers, like myself, bombed out, as it seemed that, for every thermal

*Continued on page 54*



Dave Burt, one of the top guns in the Chicago area S.O.A.R. group, zero's in on the landing strip. Brrrrr.



Greater Detroit Soaring and Hiking Society President, Warren Tiahart, launches his Olympic 99. Timer Gordon Pearson observes.



# R/C AUTO NEWS

by GENE HUSTING

Novice, amateur, and expert drivers tangle in the Winter Championship Road Race, put on by the R/C Roadrunners Club of Fullerton, Ca. Scene was the Cars of Stars Museum.

● The R/C Roadrunners Club of Fullerton staged the first big race of the 1973 season for Southern California with their Winter Championship Road Race. The R/C Roadrunners Club has been in existence over a year now and has been guided by Bud Ihnen, owner of the Pit Stop Hobby Shop in Fullerton, which specializes in R/C cars. As this was a new club with all novice racers, they previously ran closed races to keep the competition closer, but with the start of the 1973 season they opened their races to everyone and did it in a grand manner by staging a really great race on January 28th at Cars of the Stars Museum in Buena Park.

The Cars of the Stars Museum, which, as the name implies, is a museum of famous cars used in movies and TV, plus many other very interesting exhibits, has allowed the club to use a part of its huge parking lot. The club was also allowed to paint a road course on the lot, and to build a driver's stand, which is a tremendous asset to the racers.

Saturday, the day before the race, just about everyone was out for a practice session. John Thorp, fresh from his victory in Florida, said he had put in his horsepower motor for this 700 ft. long track and was looking pretty good. Chuck Hallum, who looks good on any road course, found his Associated car liked this track also and was cutting some good times. Mike Morrissey and Don Amedo sounded as though they were tearing up the track with their

Taurus cars. Earl Campbell took over the driving duties on Gene Husting's new Associated car, with Gene doing the pit duties, and Earl was very pleased with the car. Tomorrow would tell!

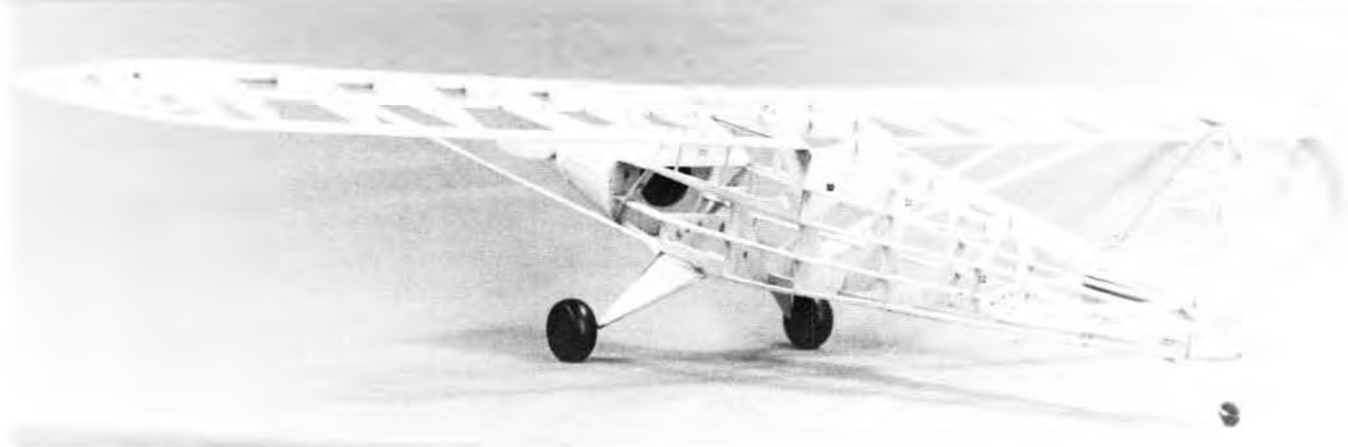
We normally have 3 driver classes; novice, amateur and expert, with every-

one running two races in their class and then the winners determined by overall times; but the R/C Roadrunners club wanted to try something different and give all the novices and amateurs a chance to beat the experts, so all the

*Continued on page 48*



"Miss Buena Park," Jenny Webb, and triple trophy winner Earl Campbell. Besides the big one for winning the main event, Earl also won fastest single and fastest 4 lap qualifying hardware.



Sterling's 35-1/2" span Piper Super Cruiser may be flown with rubber or gas power. Kit is well engineered, pieces fit, structure is light.

## PRODUCTS IN USE

STERLING'S PIPER SUPER CRUISER FOR RUBBER OR GAS, by Fernando Ramos.

●What's in a kit? In this day and age there are certainly many varied kinds of model airplane kits, and not since the days of Cleveland, Megow and Peerless have there been as many scale models to choose from. One company that has helped the scale modeler is Sterling. They have been coming out for years with flying scale models that can be adapted to either rubber or gas for power, and some are suitable for small radio installations. Recently, Sterling issued a new series of three airplanes, all at one inch to the foot scale, of the Piper Super Cruiser, Citabria, and Curtiss P-40. I chose the Super Cruiser to build since it has been a favorite of mine over the years, and I decided to build the gas version, using the Cox Pee Wee.

Even though I have been building model airplanes for as long as I can remember, (*Some guys are awfully cozy about their age! wcn*) I spent quite a bit of time reading over the plans and directions. Kits usually have steps that should be followed, otherwise you could end up doing twice the amount of work.

Typical of most all of Sterling's kits, the fuselage construction is of the crutch type, which allows for quick and easy building. One simple hint before punching out die-cut parts in any kit . . . take a sanding block and sand the back side of each printed sheet. This enables you to remove the parts more easily, with less chance of breaking.

I laid out the keel pieces over the plans, followed by the various bulkheads. To keep the bulkheads vertical, I sandwich them between some small paint bottles . . . this saves time and keeps things aligned. When the bulkheads are dry, a side keel is glued in place, and when this is dry, you can

remove it from the plan and build the other side.

Before going on, I decided what modifications should be made, if any, for the gas powered version. The first step was to take the plywood firewall furnished in the kit and install blind nuts on the back before gluing it in the proper location. The only other change was to lace the landing gear wire to a plywood bulkhead instead of sandwiching it in between two balsa ones. The latter method would be all right if you are building the rubber powered version.

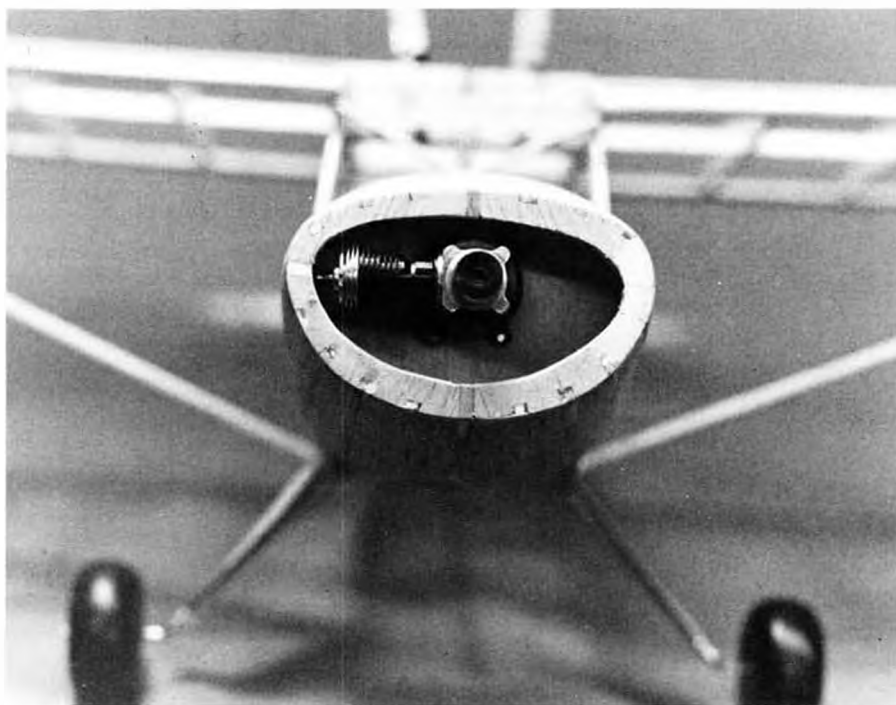
After putting on the cabin sides and a few of the stringers, the fuselage took on a very realistic look. One engineering item that impressed me was the fact that the bulkheads were scalloped be-

tween stringers, unlike most kits of this type. This of course, avoids unsightly bumps in the covering and adds to the realistic appearance of the model.

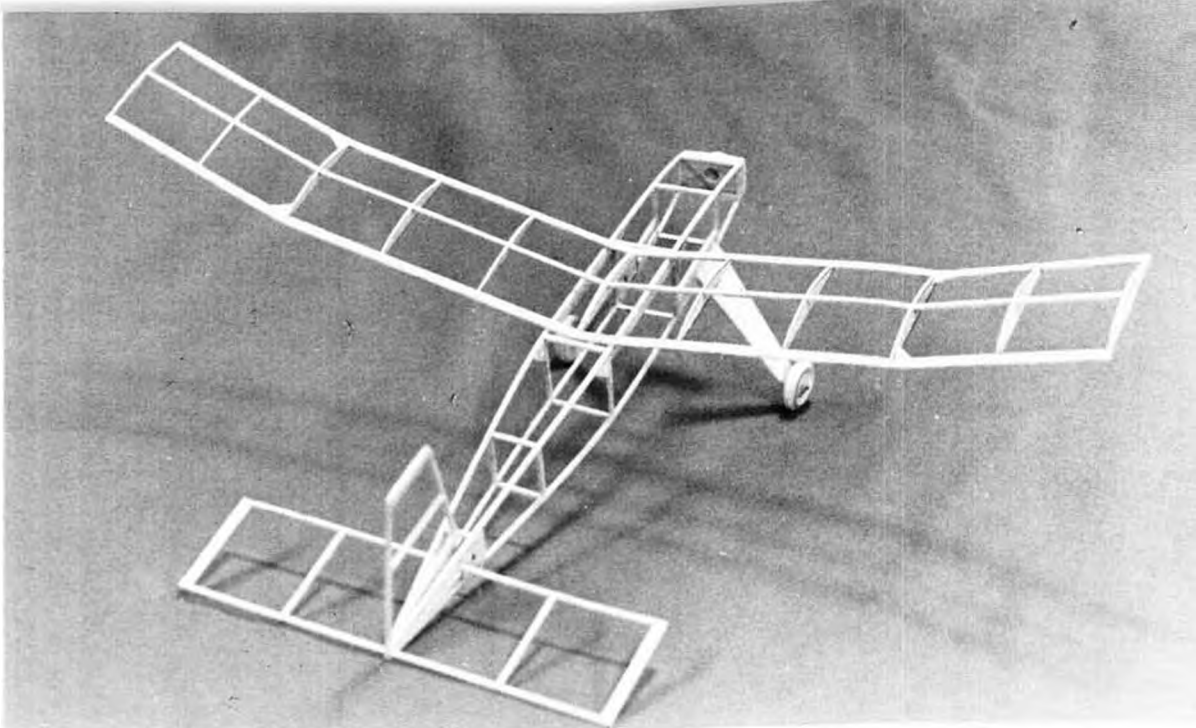
One addition which I felt the gas powered version needed was to sheet the front end of the fuselage where the cowling would be simulated. Besides realism, it also gives a great deal of strength where necessary. I measured and found that the Cox Pee Wee .020 would sit inside the cowl, on its side, without having to cut any openings, other than for the exhaust gases out the bottom.

In order to save time . . . I thought . . . I would put on all of the stringers up front, figuring to balsa sheet in between them. Was I wrong! This opera-

*Continued on page 46*



Cox .020 Pee Wee engine snuggles comfortably inside the nose of the Super Cruiser. Fernando filled the nose with 1/16 sheet for extra strength and decided there was a better way! See text.



Marlow Engineering's Shark was selected for this month's discussion on the basics of rubber powered F/F construction.

## FREE FLIGHT SCALE

By FERNANDO RAMOS

"Stick and Tissue" is coming back like Gangbusters. Let's go back and take a look at how it's done . . . and if it's already your bag, take a look anyhow . . . you may have missed something . . . .

● This month's article is devoted to the beginner, the Junior "Model Builder." Too often we overlook the fact that many construction projects, as presented, are way beyond the capabilities of the neophyte, which in turn could frustrate his efforts and keep him from ever continuing model building. There is no doubt that a good way to start in flying scale is to build Peanut models, many of which have appeared in MB. However, even these are not known to him.

The object of this series of articles is to show how to frame a stick model, cover, and fly it. The model chosen for this project is Marlow's Shark. This

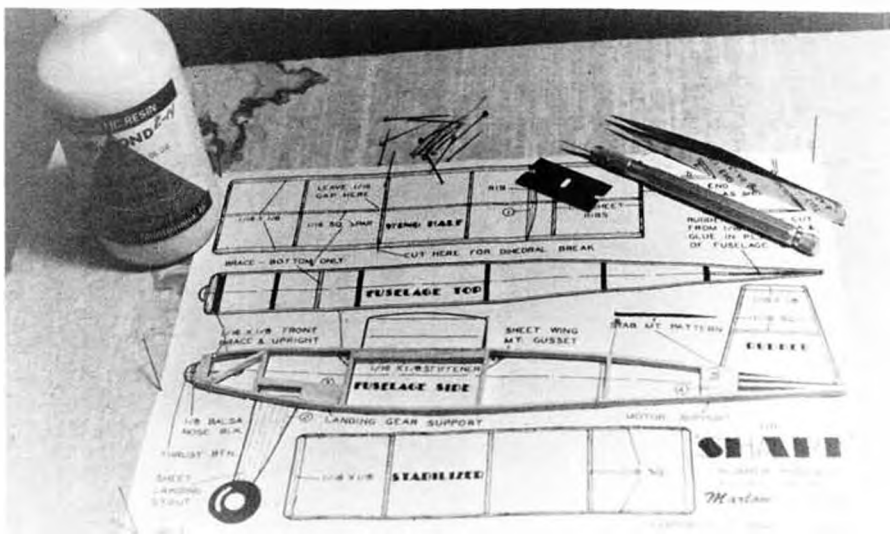
is an ideal kit for anyone's first stick-and-tissue model. It costs only 99 cents, and is complete in every respect, including an additional illustrated instruction sheet. In fact, Marlow Engineering has many inexpensive flying models in all sizes, along with many accessories.

Most of the steps are photographed with an appropriate explanation, but here are a few construction hints to complement them. The first step after thoroughly reading the instructions is to lay a piece of wax paper or plastic film, such as Handi-Wrap, over the plan to keep parts from sticking to it. I should perhaps mention that a good

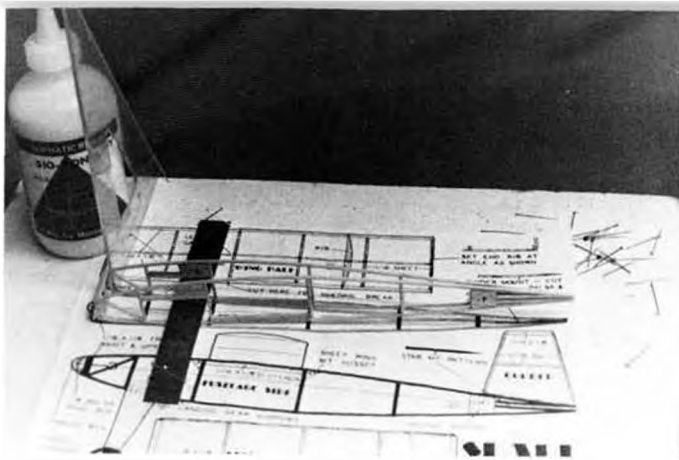
building board to use is Celotex or beaver board, which permits easy pinning of parts. This can be obtained at any lumber yard, and is often the same material used in bulletin boards.

Once you have built both sides of the fuselage, one on top of the other in order to have two identical sides, remove trim from the board. Sand the sides, top and bottom carefully with a sanding block. Take a double edge razor blade and break it in half, then break off the end of one half at an angle so that it leaves a point on one end. Now carefully separate the two fuselage sides making certain you do not cut yourself, or the wood. DO NOT separate the tail post. Using the top view as a guide, cut two front cross pieces, making certain they are identical in length. Spread the two fuselage sides apart and glue these two cross pieces in place. Hold them until the glue sets up enough so that they will not break loose. Place the fuselage on your work board and insert a straight edge, or equivalent, between a couple of the fuselage uprights, and pin it down to the board. Then place a right triangle or square up against the fuselage frame and allow the glue to thoroughly dry. By doing this, the fuselage will be square when adding the remaining cross pieces.

Nearly all rubber flying model kits, especially scale, use a thrust button. This, of course, is the round, tapered, hardwood piece that fits into the nose-



Building both sides at once, one on top of the other, assures a true and square fuselage. A flat building surface that holds pins, such as Cellotex, is essential.



After separating fuselage sides, except at tail, install front top and bottom cross members and fasten fuselage down over top view to dry. Note triangle for checking squareness of framework.

block, providing a bearing for the propeller shaft. Used as is, you run into two problems with a thrust button: One, the noseblock is usually glued on permanently so you have to stuff the rubber motor through a very small opening, and two, winding with a mechanical winder is nearly impossible. Why? As you stretch the motor out and begin winding, the knots formed are too large for the small thrust button opening. This leaves no other choice but to hand wind. A short motor and hand winding means short flights. I've seen many young modelers follow the plans and directions to the letter, and end up with frustrating flying results. The answer of course, is to make the noseblock removable. Even Peanut models, as small as they are, have removable nose blocks so one may use mechanical winders.

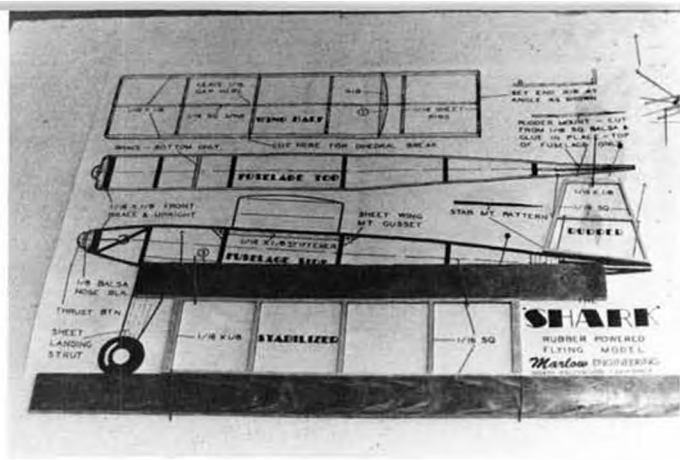
How can the nose block be made removable? Well, it is really quite a simple thing to do. Take a piece of 3/32 or 1/8 inch scrap balsa and cut it to the size of the opening in front of the fuselage. The fit should be snug. Place this piece into the opening so about half of its thickness is sticking out. Take the material that the nose block is made from, line it up with the fuselage, and

glue it onto this piece. When this has completely dried, you can finish sanding the nose block to the proper shape. As you can see, this now makes it possible for you to easily remove the front end for winding.

On the Shark, the tail is very simple, so no additional comments are necessary other than to caution you to use only the amount of glue necessary to bond the joint. Weight is a very important factor, especially on the tail. The wings on the Shark are also quite easy to build. Notice in one of the photos that I have a straight edge up against both the trailing and leading edge. I feel that this is a good practice to get into. Wherever there is a straight section in any of the structures, it is a good idea to have the material up against the straight edge for more structural accuracy.

At this point, the entire model should be given a final sanding with fine sandpaper, say about a 400 grit. Next month I will discuss a very simple method of covering and trimming out the model for those nice, quiet, long flights.

Sig has just announced that they will be offering a kit for Tom Stark's Nats winning rubber powered scale Mr. Mulligan. The model has a 20 inch span and

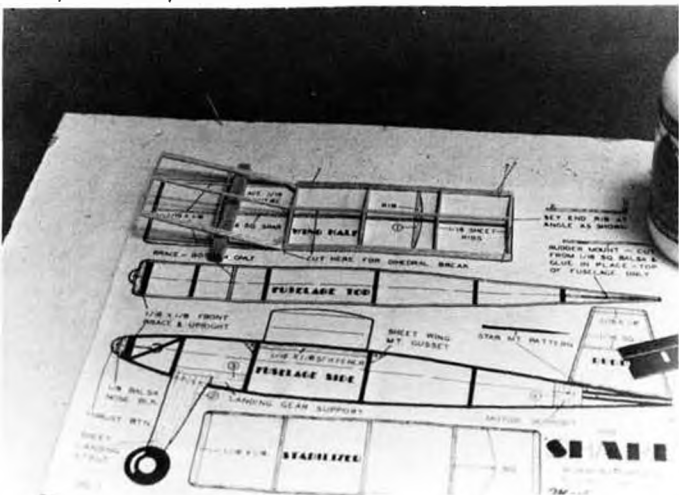


When pinning straight pieces to plans, keep them straight by blocking up against metal strips or rulers. Don't pin through the wood. This will split and/or weaken the structure.

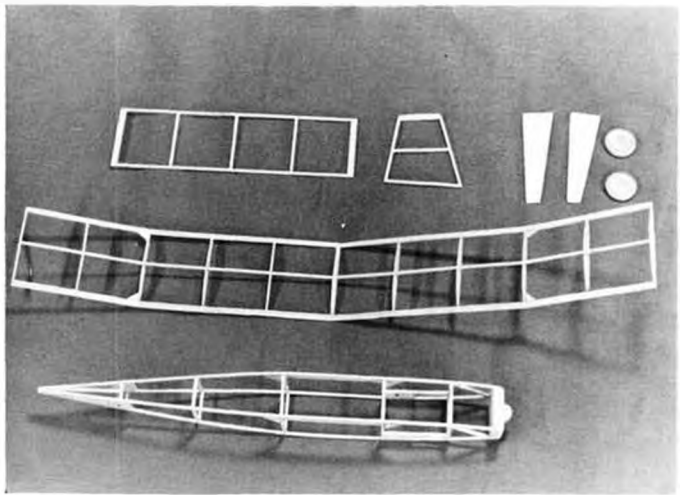
the kit is going to be very complete, with die-cut parts, covering material, decals, and Sig's contest rubber. The price is a very reasonable \$2.95. We hope to have a kit review in the near future.

The following is a list of dates and events from the Contest Calendar of the N.A.R. Flightmasters for the remainder of the year: June 10 - 4th Annual R.O.W. Contest at Lake Elsinore for rubber, gas, CO<sub>2</sub>, F/F, and R/C. August 19 - R.O.W. at Lake Elsinore, same events as before. October 6, 7 - Biggest Scale F/F Contest, the Flightmasters Annual. This is for rubber, Peanut, CO<sub>2</sub>, electric, and gas. Judging takes place the night before, at North American Rockwell's Recreation Center in Inglewood (North American Rockwell is now called Rockwell International). November 25 - Northrop has their flying wing contest. This contest also includes scale. December 9 - Jumbo and Peanut scale at Lake Elsinore. Later, there will be a rubber scale speed event. All of the contests are AMA sanctioned.

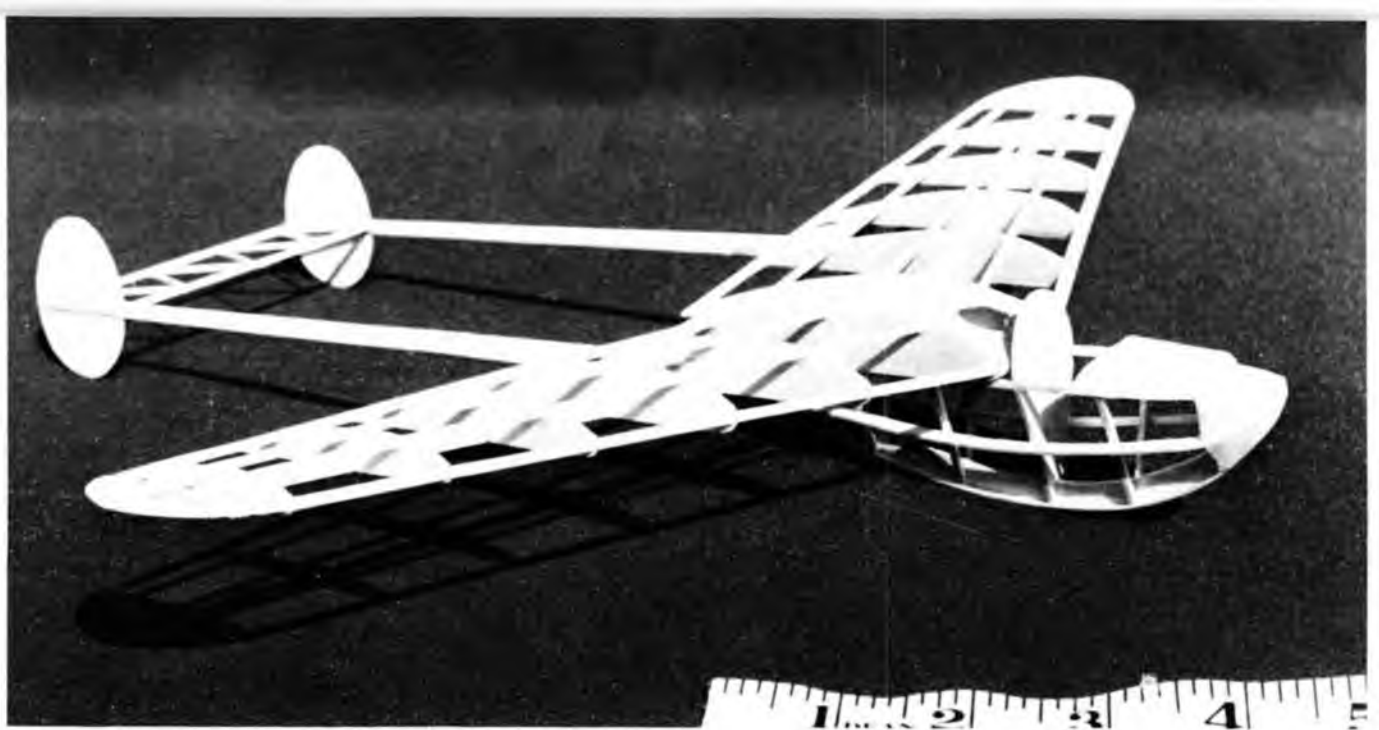
Any comments regarding this column would be greatly appreciated. Write to Fernando Ramos, 19361 South Mesa Dr., Villa Park, Calif. 92667. ●



One half of the wing has been blocked up for tip dihedral. We suspect that Fernando was putting in some tip washout, since the block is not quite parallel to the rib.



Here are the basic parts, already for covering. Next month, Fernando will take us through the covering process and also trim out the plane for long endurance flights.



# TEA KETTLE

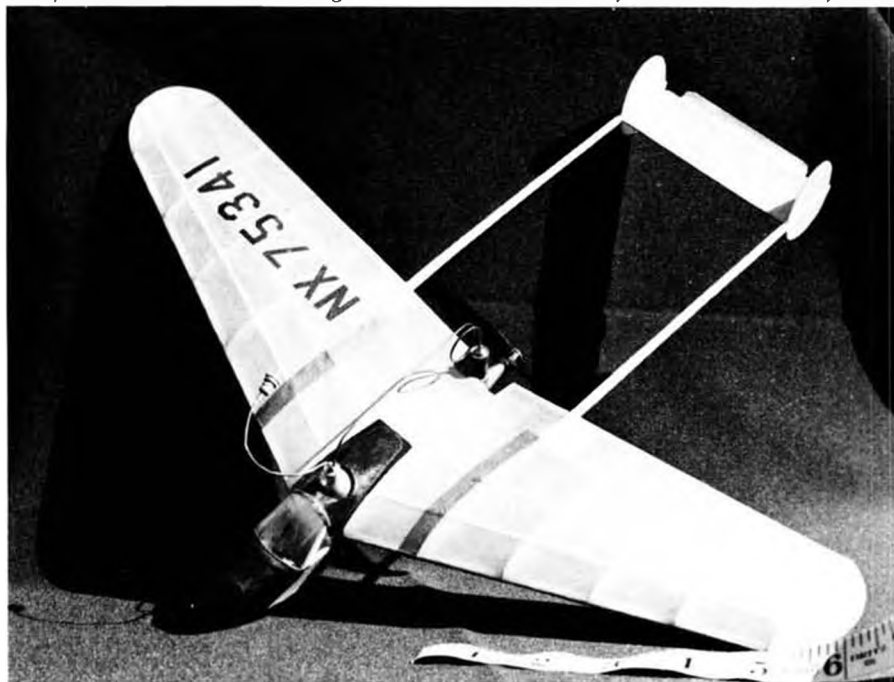
Care to investigate CO<sub>2</sub>? Here's a little out-of-the-rut design that affords excellent protection for that little jewel of a Brown engine while you're getting used to it. By DANIEL WALTON.

● A long time before his awesome XB-35 and YB-49 ever flew, Mr. John K. Northrop was experimenting with flying wings of a much smaller sort (The N1M and the N9M are two quite successful examples of these). But even before these fabulous machines ever flew, there was one more wing.

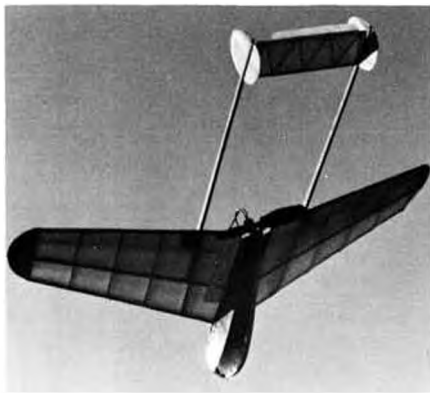
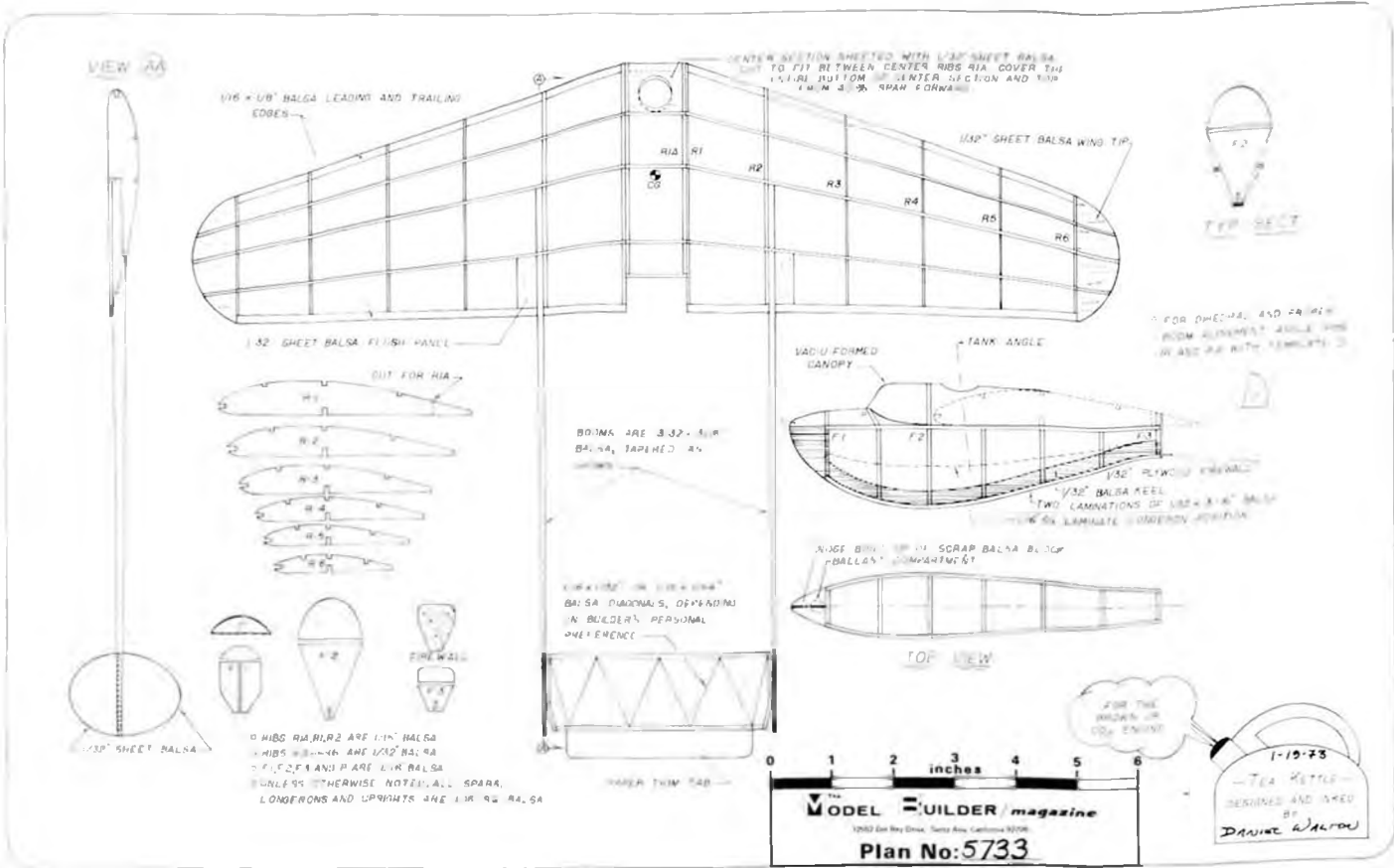
In 1929, Mr. Northrop had designed yet another prototype flying wing. This machine employed many of the advanced traits of its later brothers, such as the motor and payload contained within or faired into the envelope of the wing itself. Other features in common were thick symmetrical airfoils, shaft

driven propellers, and a gently swept wing with taper. However, this particular plane also had a tail on two long thin booms. This was done as a precautionary measure so as not to unnecessarily risk the valuable prototype. At this point in history, little was known of the performance habits of the tailless type of aircraft, let alone a true flying wing. It is interesting to note that Mr. Northrop himself defined an aircraft of the all wing or flying wing type as "... A type of aeroplane in which all of the functions of a satisfactory flying machine are disposed and accommodated within the outline of the aerofoil itself." John K. Northrop, "Development of All Wing Aircraft," *Journal of the Royal Aeronautical Society* (1947) pp. 276.) This ideal was most closely realized in the XB-35 and YB-49 designs.

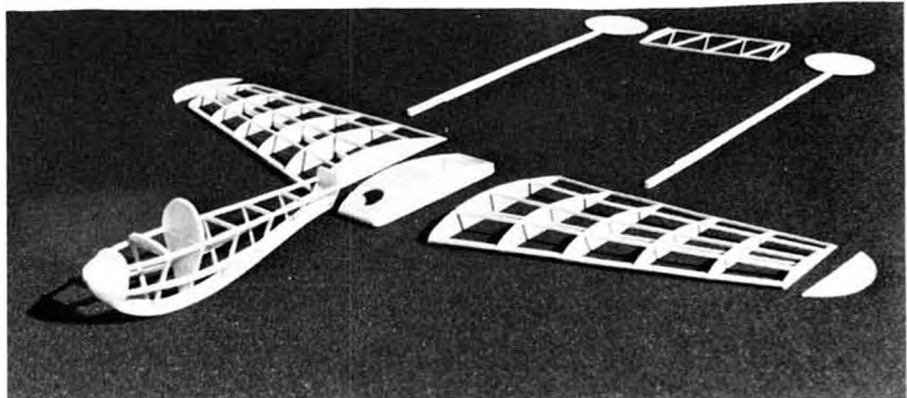
In designing the Tea Kettle, the 1929 prototype was used as a base, and was modified to suit the Brown Jr. CO<sub>2</sub> engine. Since the only thing to go by were a couple of pictures of the 1929 prototype, most of the lines and dimensions were laid out by the eye-ball method. Having done this, the next step was to start modifying the plane to a sport-trainer configuration. An aircraft with no center pod as the pictures showed would have been difficult to correctly



The finished Tea Kettle, showing off its scale-like lines, was patterned after an early (1929) flying wing design which carried tail surfaces for a little "stability insurance."



Author didn't say whether this "flight" shot was posed or not. Looks good anyhow.



Separate frame pieces ready for covering. This shows how the plane is broken up into sub-assemblies. Total finished weight is 3/4 of an ounce.

balance and trim, so a pod was added. The other advantage in doing this was that it permitted the almost vertical position of the tank, without its hanging out in the open. Mr. Brown includes a warning in the instructions about tank positions which will cause flooding, and the inevitable self-destruction of the engine as it chews away on dry ice. The tank position on the plans seems to be best and has never caused any trouble.

To make the construction of the wings easier and the model more efficient, the symmetrical aerofoil on the 1929 prototype was changed to a flat bottomed type, since the former does require a great deal of jiggling in the construction stage.

The final modifications were the

addition of some more dihedral for greater stability, and the elimination of the landing gear. Unlike most sport planes, the Tea Kettle has no wheels and therefore lands on its central skid much like some of the earlier gliders. This assembly is quite simple, strong, and has proven itself well suited for the job. It also makes for a lighter model.

Now comes the patient scrounging for the proper engine accessories and wood. First, the propeller. The Williams Brothers prop which comes with the engine is too big for this model. Instead, remove the prop for future use, trundle down to the Hobby Shop and buy one of the smaller Comet brand kits, 14 inch wing span or under, particularly the larger Struct-O-Speed line. They

feature a nifty black plastic propeller which is 3-1/4 inches in diameter. The shaft hole will have to be bored out to a larger diameter in order to fit the engine, but this is no great task.

The next item is wood selection. Cost will depend upon the size and content of your scrap box. The original Tea Kettle was built entirely from scraps. Weight is the most critical factor, so except for the LE, main spar, and the booms (which are of the stiffest balsa possible), go light. The original weighed about three quarters of an ounce trimmed and flying.

Now, the engine mounting screws. The radial mounting holes on the engine are too small for the 0 x 3/8 inch

*Continued on page 56*



Junior Birdmen emblem . . . Peep, Peep!

the traditional type. Again, the price is very low, since these items are intended to be discarded after limited use.

Keith C. Donaldson sent a portion of a bamboo porch screen to us . . . literally a life-time supply of the stuff. Bamboo has a long heritage of use in aviation. Santos Dumont's Demoiselle employed it extensively as did Glenn Curtiss' early pushers. The tradition is

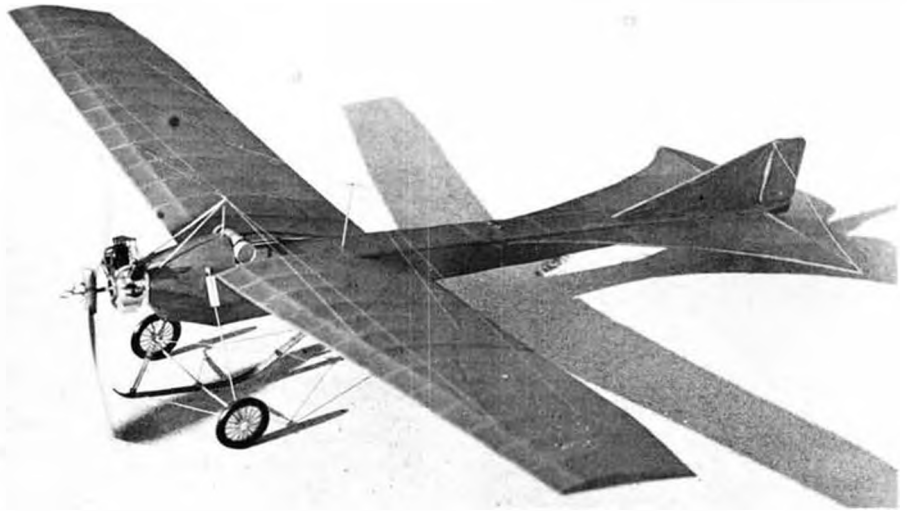
. . . being concerned with the fine art of model aeroplaning . . . . By BILL HANNAN.

THE FLYLIGHT ZONE

Our masthead photo this month was furnished through the courtesy of Le Lt-Col. (C.R.) J.B. Reveilhac and M. Kayser of the French Air Museum (Mussee de l'Air), and dates from 1910. If you don't recall our regular mast-head illustration, by all means take a look at last month's issue of Model Builder . . . we think the resemblance is quite startling . . . particularly since the drawing was done almost a year in advance of seeing the photo, which was brought to our attention only recently by author John Overton, who saw it while in Paris. Although the Nieuport in the photo is an earlier machine (ours is a 1911 model), we think the similarity exceeds the limit of coincidence. Needless to say, WCH is busy "correcting" his drawing!

SUPPORT YOUR LOCAL CHINESE RESTAURANT

Handy hint from aviation photojournalist Warren D. Shipp concerns overlooked sources for bamboo. Nicely rounded bamboo food skewer sticks, approximately 3/32 inch diameter by

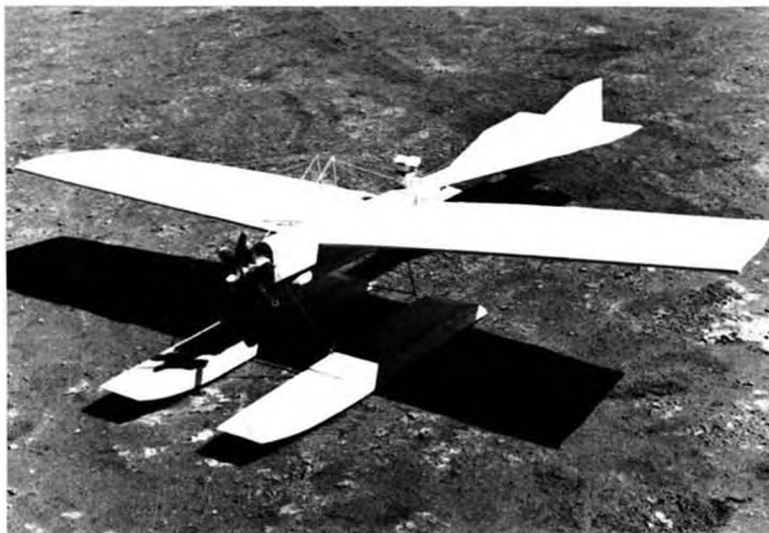


French REP "B" by Major Tom Stark. Model is shown in rubber-powered form, but has since been converted to CO<sub>2</sub>.

8 inches long are available very inexpensively. The package he sent contained 50 pieces, and was priced at only 25 cents. School teacher Clyde Howard mentions larger size pieces being available in the form of chop sticks! Some outlets stock only the "new-fangled" plastic variety, but others still market

continued in some present-day hang-gliders (and in Lou Proctor's excellent line of kits. wcn). Many early model aircraft were constructed almost entirely of bamboo. Even though relatively heavy by virtue of its density, it is so strong and resilient that smaller

Continued on page 51



Chuck West (Las Vegas), entered this 1910 Deperdussin in Flight-master R.O.W. meet. Tynee Vidal photo.



Texas Boy Scouts (l to r): Johnny Watson, Rick Reese, Mark Rodgers, and the Vaughn brothers, working on Peck-Polymers Peanut models for their Aviation Merit Badges. Program counselor is Bailey Reece.

The MODEL BUILDER





Ron Wittman testing a new A/1 Nordic at Lake Elsinore. He's current indoor HLG record holder.



Fudo Takagi and his vintage Wakefield. It was lost for a month, back in 1964, and found by Tom Hutchinson.

If you do write for any of these, tell 'em Model Builder sent you!  
TIP OF THE MONTH . . .

(No, not wingtip!) One of the handiest items to have when building with small, intricate parts is some form of clamp. Unfortunately, most commercial ones are designed to hold the fireplace to the wall, a heavy-handed approach. The Imperial Hair clip (medium size) can be the answer to our problem. It is small, light, and of soft enough material to be bent for different applications. It's ideal for holding vertical webbs to

spars, planking to leading edges, etc. It may even replace the rubber band! They are available in drugstores at about 10 for \$1.00, but much cheaper if bought by the pound in beauty supply houses. There they'll be about \$1.00 per *pound*, which is about 100 clips.

BRING YOUR A/1 OSHKOSH . . .

Several years ago, the AMA dropped the A/1 Nordic event from the Nats schedule, supposedly to shorten the ever-growing event list. If an event has little participation or cannot help the

novice flier get into modeling fairly easily, then there is justification to drop it . . . but A/1 *does* help new modelers. Along with Coupe, it is an unsophisticated entry for a future FAI'er. There is plenty of interest in the event here on the East Coast, and judging from West Coast contest schedules, it is not exactly neglected there. Why then is it still missing from the Nats roster? There are 5 classes of FF Gas Flown in the 3 age categories; 3 of Rubber (Coupe, Wakefield, Unlimited), but only one towline event. Can NFFS sponsor an



Bob "Godfather" White wears official Max Men of the World uniform. Easily won the 14-round Max Men FAI contest.



Winner of Max Men FAI Power at Elsinore was John Warren with 14 consecutive maxes. Al Vela design with Rossi power.



Randy Secor displays the latest thermal detection technique: Grab a handful of dry cattails, blow 'em into the air, and see if they go up!



Both the cattails AND another model are going up, so Al Hotard gets ready to launch his Wakefield. Jim Wright is lighting the fuse.

unofficial A/I contest at Oshkosh? They did it at the Kansas Nats in 1968 and shamed the AMA into adding A-Gas the next year and all Nats since. Let's put it another way: How many FF'ers do you know who *don't* have an A/I? SLEEK STREEK ENDURO . . .

Did you know that there is a "kit" indoor model that the newest flyer can assemble at a site (indoor) in 5 minutes, trim in 3 flights or less, and get official flights of 60 seconds? And if that isn't enough, the model sells for all of 39 cents. Of course I'm describing the North Pacific "Sleek Streek," which my club (S.C.A.M.A.) has been using as an "equalizer" in the indoor sessions . . . to prevent the more experienced hands from walking off with all the hardware. What happens is this: You bring an *unopened* SS to the meet (or someone buys a dozen or so and sells them on the site) and assemble it there. The only thing you can replace is the rubber. Tests to date from our "SS Champ," Bob Lipori, indicate that .075 Pirelli is about right, one loop somewhat longer than the peg-to-hook distance.

No modifications are allowed . . . someone is sure to get the idea that they will fly better "If I only sand the fuselage a little . . ." etc. My feelings about this were expressed in the club meeting before the SS contest. "It is amazing how fast a competitive FF'er

can RUIN a sport event." Warps and bending of surfaces for trim are, of course, allowed. Lipori automatically assumed this to mean that he could change the prop pitch, which increased his flight time. Ed Cattey felt that "Warps" included wing camber, so he added more to both wings, which increased *his* scores! See what I mean?

The best pattern for duration seems to be left (no glide) with rudder deflection for turn and wing placement (fore and aft) for climb angle. Climb speed and cruise duration are governed by rubber size, but a hot climb is not the best pattern for score. Lipori figures that the models need just enough rubber to take off (all flights must ROG . . . The Old Timers are right, takeoffs are great!) and slowly climb. Rafter banging is useless, since the models have such poor stall recovery that they lose all the energy in the 2nd climb (If your ship is one of the few that does pull out!). Ground loops can be a problem, but an easy cure is to bend the left L.G. leg forward, it straightens out the tracking. You can even lose them outdoors, but it takes a pretty potent thermal. Do you need a back-up Unlimited Rubber ship?

RE-COVERING TISSUED SURFACES . . .

Is a chore most of us would rather forget; but a method I recently came upon may make life a little simpler.

Seems that Carrol Allen (Skyscraper) always shows up at Eastern meets with the newest looking models, never patched or "holey" looking like everyone else's. How does he do it? Dan Marek (another Skyscraper) found out and passed the tip on to me: Seems that Carrol figured out why dope thinner never gets a chance to dissolve the old dope holding the tissue to the frame. It evaporates too fast. If you've ever tried to remove tissue by brushing thinner through the old tissue onto the structure, you will be aware of the problem.

Well, there is a way to slow down the evaporation process. Use one of the "food wraps," such as "Handi Wrap," as a sealer after doping the structure. It works like this: Select a section of structure you'd like to re-cover, like a wing center panel. Tear off a piece of wrap that is big enough to go around the panel and then some, then brush straight thinner onto all the areas where the tissue is stuck to the paper, like ribs, L.E.'s, T.E.'s, etc. Now, quickly wrap the food wrap around the panel, sealing with hand pressure. Leave the whole thing alone for at least 10 minutes, then remove the wrap. You will notice the odor of thinner still remaining, an indicator of how well it's been trapped. The next part is nothing short of amazing. Lift off a corner of tissue, and pull

*Continued on page 50*



Al Vela in the process of saying goodbye to "La Mula." Of all the things that could go wrong, who'da thunk the glasses would be the culprit. Practice hooking up in the dark, Al.



John Warren launching his Super Fly Mk.1.



By  
AL VELA

# F/FAI

NOW YOU HAVE IT, NOW YOU DON'T.

Now you have it, now you don't.

For the past 8 or so months, we had been flying very successfully two of our designs; the old "Mule" and the "Super Fly." Almost every decent weekend we were out there at (Lake) Elsinore, putting in 10 or 15 flights a day; Rossi's and Seeligs working perfectly. So we said, "You got it, Al!"

Not so . . . as one cold and sort of wet Sunday morning, the very day of the F.A.I. contest put on by the "Over The Hill Gang," also known as the "Max Men of the World," or "The Max Men of Southern California" (probably at the next meet they will find one more name). Anyway, this was the day that we did a mass murder of all of our ships; including our newest design, the "Hot Butter."

As always, the old questions, what happen? Several of the other flyers who witnessed the massacre had the same question. Was it timer failure? . . . Warps?

Well, this time we were lucky to find what was really working wrong, and very happy it happened way ahead of the Semi's in September! Everything was just fine, including the pilot, as we were hooking lines in the right place in the

timer . . . Now this is what my *old* glasses were telling me, but in reality it was something entirely different! My old glasses were lying to me and the hooking of lines was all in the wrong places! Results weren't bad considering that a lot of time is still ahead before the real competition.

Now we are working on the repairs of models; except one, the old "Mule" was completely destroyed! OH, and to

*Continued on page 57*



Sandy Norton doing the javelin bit. He'll be a CD at the Free-Flight Championships to be held at Taft, California on Memorial Day Weekend.



Ralph Day's "Flying Quaker" in a white-out of snow, six feet off the ground and on the way up. Power is a Super Cyclone.



# PLUG SPARKS

By JACK TRANSUE

THANKS . . . !

As you know, for any endeavor such as this to be a success, it has to be liked and accepted by those people for whom it is written. If the mail we have received so far is only a small indication of your acceptance, then we feel we have succeeded in our goal. The letters have been both praising and critical. Hopefully we can stay humble with the praise, and learn from the criticism. Thank you.

We have always wondered what the other half was doing while we were enjoying 365 days of perfect modeling weather. (*Be honest, Jack! The Chamber of Commerce doesn't read MB anyhow. wcn*) Now we know . . . Skiing! But as you can see by the pictures, the skis are on the other foot . . . or should we say landing gear. The pictures were sent in by Lin Haslam from Salt Lake City, Utah and prove that even the most adverse weather can't prevent a dedicated modeler from doing what he enjoys most . . . flying.

Mr. Haslam also has some comments regarding the Old Ruler type model as mentioned in the January column. He goes on to say, "We here in Salt Lake City are generally opposed to this for at least two basic reasons; the first one being that it is not at all consistent with the preamble of the S.A.M. rules. To quote in part " . . . It is neither

desired to advance the state of the art of aeromodelling per se, other than to increase participation in the sport generally." (If we're going to stick to that, then it is our opinion that maybe we should ban micro switches, pop-up tails, and mechanical dethermalizers. JRT) Mr. Haslam goes on to say, "The second reason is more of a personal thing with myself and at least two of my close buddies. We were just teenagers when the glow plug came in, and with our limited budgets and building space, we were unable to participate in the 'Hey Day' of ignition flying. We also have the same general opinion of converting glow engines to spark ignition use. This is

specifically an advancement of the state of the art and is also in contradiction of the S.A.M. preamble. If they want to use glow engines per se, fine . . . they fly with the reduced engine and miss half the fun."

We hope that if Mr. Haslam comes to the SAM Championships in June he remembers to remove his skis and reinstall his wheels, otherwise he may find it real rough sledding trying to get off the ground.

As promised, we received our Hex Head Brat from Replica-Engines and even though we don't pretend to be a P.G.F. Chinn, we will try to give you an honest report on the engine. It isn't



Ralph Day with Super Cyclone powered Megow "Flying Quaker" (left), and Lin Haslam with Super Cyclone powered Berkeley "Super Buccaneer."

Beginning in this issue with an .020 replica of the "Aerbo", 1941 Nationals Class A winner, MODEL BUILDER will present an Old Timer model plan each month. Some models will be .020 replicas, and some will be full size (such as George Reich's "Albatross", coming in the next issue). Full size plans will be available, however no building instructions will be included.

Phil Bernhardt, designer of .020 Aerbo replica with full size, Arden .199 powered version by his father, Otto.

hard to see why engine collecting has become as popular over the years as it has. The engine hasn't been run in enough to give a full report on that part of it yet, so we will examine the workmanship portion now and report on the running abilities later.

The engine was disassembled as much as we dared to and the first thing we noticed different was the fact that the head screwed into the I.D. of the cylinder rather than onto the O.D., as would

normally be expected. Two heads come with the engine, one high and one low compression. External machining on both heads is excellent, but the threaded portions lack the sharpness that one would normally expect.

The cylinder shows top-notch workmanship and is machined from 113 steel tubing, each one being honed to size and individually fitted. The bypass cover and intake tube are silver soldered in place and cadmiun-plated, except on those engines after Serial Number 78, which are polished instead of plated.

The bypass covers are made of stainless steel and are an identification feature. The crankcase is sand cast aluminum and again the workmanship is excellent. On comparison with a photograph of the real Brat, the replica is truly a fine copy except for those features that make it a replica.

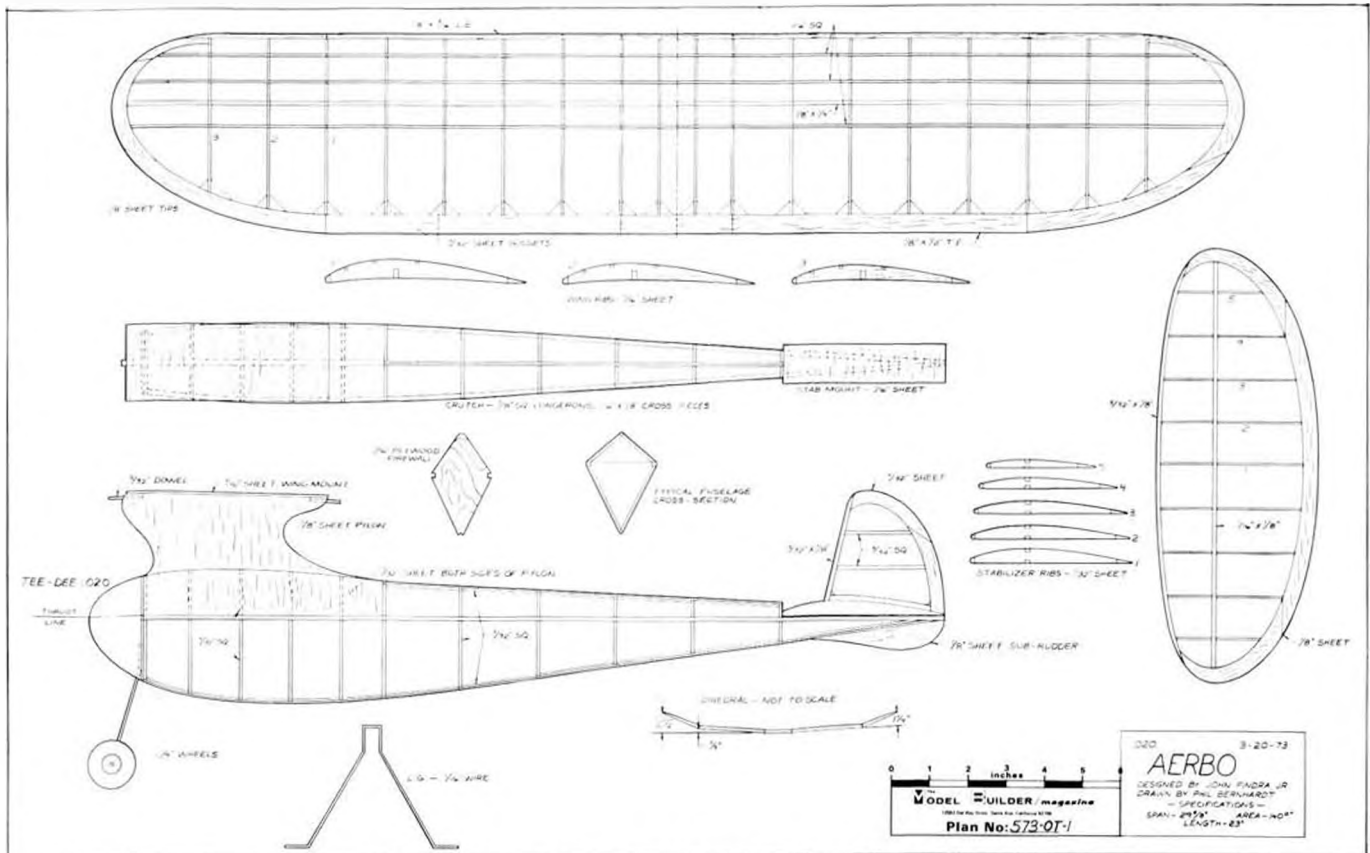
The connecting rod is made from phosphor-bronze and it is here that the only real weak point in the engine is noticeable. There just doesn't seem to be enough meat around the throw to last for really hard running. However, this engine was basically designed for the collector to display. According to Karl Carlson who builds the Brats, 9000 RPM can be achieved by reworking the engine. If any one of you have purchased the Brat for flying, Karl will modify the engine for hotter performance for under \$10.00.

The last word we received was that



### O.T. Model of the Month . . . An .020 Replica of the AERBO.

The Aerbo was designed and developed over a three year period prior to winning the 1941 Nationals Class A event. Designed and flown by John Findra, Jr., the winning ship was built in the two days before the Nationals, and was test flown the morning of the event. It was powered with a 1940 Bantam .19, swinging a 9 inch Standard Ritz prop. Wingspan was 42".



there were only around 20 of these little beauties left and the price is really reasonable for such a truly fine piece of the past. Again, the overall workmanship can only be rated as excellent and the engine is something anyone would be proud to own.

For those of you who are still trying to locate flyable engines, drop a line to Hank Hilscher, P.O. Box 725, Indianapolis, Ind. 46206. Received his latest listing and counted over fifty ignition engines for sale, and all at a price anyone can afford. Hank also has spare parts, so if you're grounded because of a missing "whatever," drop a line to Hank and he might be just the one to get you back in the air again.

Just by accident we discovered something that might help cure a sagging engine. While test running an O&R 60 one evening we just happened to notice there was a high voltage arc coming off the lead running from the coil to the points. This arcing was not noticeable in the light, but in the dark, you could see the arc very plainly. It was jumping about an 1/8 to 1/4 inch, and even though the engine sounded strong enough, an attempt was made to insulate the lead and to run the engine again. After starting, the lead insulation was removed and a noticeable drop in RPM was experienced. Further tests showed that even the high tension lead was prone to arcing if allowed to come too close to any grounded part of the engine, such as an upright needle valve. While breaking in the Brat, a mild shock was received while adjusting the needle with the high tension lead approximately 1/8 inch away from the needle. My recommendation would be to double insulate both the coil-to-points and high tension leads if you are experiencing low voltage at the plug.

Another big source of power loss is vibration, and the cause of this is sometimes not so easy to remedy, mostly due to the fact that in the normal single cylinder engine, the vibration can come from two areas; the external and internal. Now we all know how to cure the external source of vibration . . . balance the prop. But how do we cure the internal source of vibration? We can't. This has been the one big fly in the ointment ever since the two cycle, single cylinder, internal combustion engine was invented.

Most of you are probably saying to yourselves that the internal parts of the engine are balanced, and with this we will have to agree. But, the engine is only balanced for *weight* differences, not for *mass* differences . . .

Let's try to explain it this way. Suppose you took a small electric motor, attached a six inch disc of aluminum to the output shaft and started the disc rotating at around 1000 RPM. Now, if the disc is perfectly centered on the motor shaft, we should be able to set the whole assembly on the edge of our workbench and watch it spin merrily away with no problems whatsoever. But, let's just add a small weight to the edge of the disc, at any point, and then start it spinning again. Chances are 100 to 1 that the whole mess will end up on the floor. Why? Because we created an out-of-balance situation by adding the weight, and the only way to restore law and order is by doing one of two things; remove the weight, or add the same amount to the opposite side of the disc thereby bringing it back into balance.

O.K., simple enough you say, but what if instead of just adding a small weight to one edge we add a small rod with a ball on it? Now, not only have we added excess weight to one edge but we have also added extra mass, and it is this mass that is going to prevent us from achieving a true, balanced disc. We can add various amounts of weight to the opposite side of the rod and ball until we get blue in the face, but the only way we will rebalance the disc is if we add another rod and ball directly opposite the first rod and ball. Zingo! You now have the makings of a two cylinder, two cycle engine!

So . . . do we pay double the expense for this vibrationless wonder, or do we use what we have and hope that during the course of the next contest we enter the whole mess doesn't decide to go flying off on its own. Our suggestion would be; use what you have, but if you can't cure the vibration, at least soften it, and here's how:



Lin Haslam's Super Buc soaring overhead. Ship has 7-1/2 foot wingspan.

If you're using those pressed aluminum or steel engine mounts so popular years ago, get rid of 'em . . . original yes, functional no! All those little bends and creases just won't give you a good solid platform on which to mount your engine. If you can't use one of the many solid cast or machined mounts available on the market today, try and get a machinist friend to fabricate a pair for you.

Now that you have your engine bolted firmly to its mount, what about the mount the mount mounts to . . . namely the firewall? If you're still using plywood, how thick is it? For most 19's through 29's, 1/8 or 3/16 inch is fine, but for anything larger, and particularly the 60's, nothing less than 1/4 inch should even be considered. If your firewall is removable, such as on the Cleveland Playboy, the bulkhead next to it ought to be equally thick, and the firewall should be attached with at least three 8-32 screws and blind nuts. Always check the tightness of each screw before every flight and you won't have any more worries about wayward engines.

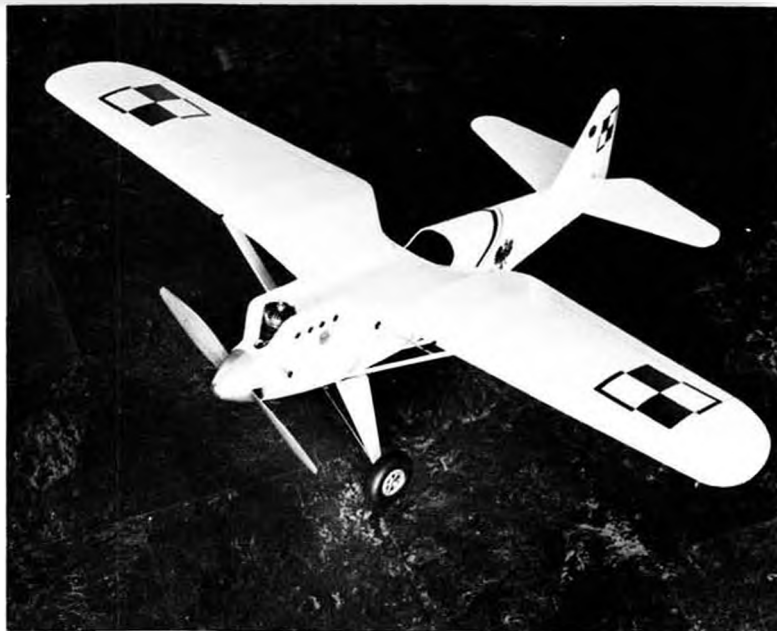
A number of West Coast modelers  
*Continued on page 48*



Lin's Super Buccaneer stands out sharply against the white snow background. With easy starting ignition engines and skis, there's nothing to keep you from flying in the winter air.



Half-A Proto speed plane by Jim Wade. Power is a left-hand Tee Dee .049 with single blade prop. Kirn-Kraft glass fuse, Cox pan, 90+ MPH.



Mono-Line equipped Polish Fighter from Sterling kit. Powered by Fox .25 and flown on 60 feet of .022 line. Class B Speed-Master unit.

# CONTROL-LINE

By DALE KIRN

Spring has arrived and control-line flying is in full swing. According to several leading model manufacturers, the volume of kits this year is already larger than last year. There's a big surge in 1/2A kits. A quick glance through the latest AMA Competition Newsletter indicates several control-line contests will be having 1/2A Combat and 1/2A Mouse Racing events . . . as well as the already established 1/2A Proto Speed events.

Many 1/2A flyers have found that they can have just as much fun at considerably less cost with the counterpart of a plane in a larger engine size. The Mouse Racing (1/2A Rat Racing) and

Combat events so far have been limited to the Babe Bee .049 type engine. But we imagine that shortly this will be changed to include the hotter engine (Tee Dee .049) as several flyers already have expressed their desire to "go faster."

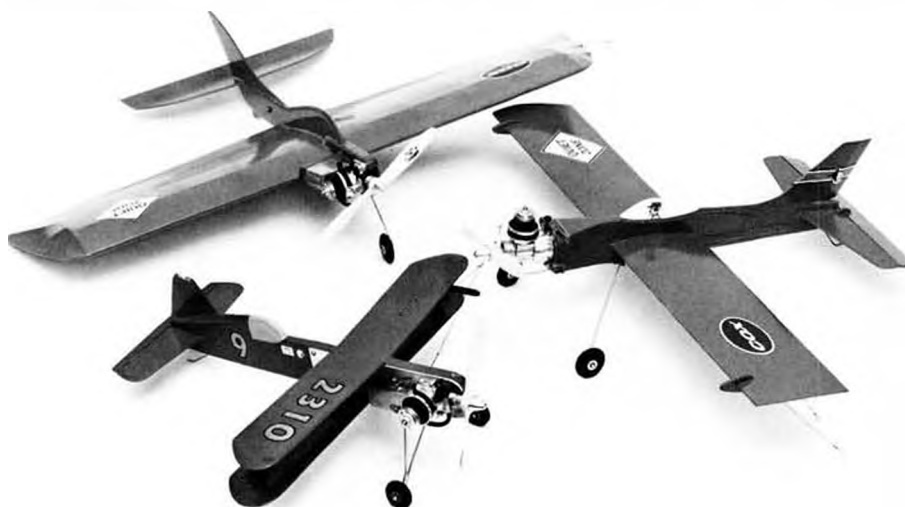
Stunt planes have been getting bigger and are using more powerful engines. A .29 powered stunter is almost considered an old-timer. The semi-scale stunt plane development has come a long way, and these builder/flyers should be congratulated on their accomplishments. However, this trend appears to be cutting into the number of contest stunt flyers, as many just don't

have the time to build a plane of this caliber. It may be necessary to establish a "semi-scale" stunt event to correct this situation.

Speed flying is picking up in several parts of the country. The two areas of greatest interest now are jet and 1/2A proto. This is due to the fact that custom made kits are being produced in these classes. The other classes could use a shot in the arm with a kit or two. Don't wait for the larger kit manufacturers to make them . . . they won't. Just isn't enough market for them to justify the tooling costs. If your interest is in the A, B, B Proto, FAI or C Classes, it is suggested that you start bugging some of the more experienced speed flyers in your area to consider making a good custom kit.

The Anaheim (California) Model Airplane Club now has over 60 members and is growing every week. This new club (sponsored by the Anaheim Parks and Recreation Department) has many youngsters learning the fundamentals of building and flying control line planes. Flying site (Anaheim Stadium [Home ball park for the Angels] parking lot) is really active on the scheduled flying days. Five to seven circles are constantly in use. Plans are under way to improve the flying site by moving in a storage shed (for club equipment) and to paint 8 circles onto the asphalt. Approximately 75 percent of the members are flying

*Continued on page 47*



Muller equipped .049's. Two Tee Dee's and one Babe Bee. These planes can be flown almost anywhere and cannot be heard over 100 feet away.

● The size of the deed usually has no direct relationship with the size of the hero. So the amount of fun and quality of competition that can be had with the 36-600 Class boat is not diminished with its small size. All of the 36-600 skippers will agree there are better all weather boats, but you will find few that will give the variety that the little ones can. No other class will allow multi-hulls to run with the conventional type.

In last month's issue of Model Builder, Tom Protheroe's Pea Pod design was published. The construction and sailing article gave you a "legal" 36-600 yacht. The next step is to add a winch and you will have a boat that is capable of being raced along side of the others. If you have any doubt as to Tom's ability in design, some of his better known creations are the Santa Barbara One Design, the set up work on the Vortex Soling M, and now the Pea Pod. In case you are wondering, Tom designed Pea Pod to run just as presented, but the addition of a sheeting system could make it competitive. *(Maybe there should be a subdivision into "winch" and "cleat" classes, then the cleat system would be competitive. WCN)*

The history of the most open class in R/C sailing is a short and simple one. It all started in San Diego when three of us wanted to build some small and inexpensive sail boats. It seemed that nobody else would fork out the money to get a kit for a big boat like mine. Even though well over 200 different people eventually sailed it, our local bunch wanted to make it small.

In the December 1966 issue of Model Boats (British) there were plans for a 34 inch sailboat. We started out with good intentions, but somehow they wound up a little over 35 inches long. The sail area was about 450 square inches, but later much more was added. With four boats under construction (one for my wife) things looked good . . . but then the trouble started.

Someone else wanted to join us and make boats. That was fine until we had eight under construction, and then others wanted to get copies of the plans. Somehow out of all that mess, we wound up with 18 to 20 hard chine little devils; some in wood, some in fiberglass, some with doorskin sides, some with 1/32 sides . . . and then there was no class. Not only were sails made bigger but keels were made deeper and we had some of the wildest racing you ever saw.

What was needed was a set of guide lines that would allow all the boats of



Chuck Black built Diegan, a 36/600 R/C sailing yacht that is very good in strong weather.

# main sheet

This month's yachting editor is Don Prough (sounds like "pro"), AMYA President, who says, "Put a little boat in your life." He's referring to the increasingly popular 36-600 class, of course.

the same relative size to race together and yet draw a limit on some things. The length of 36 inches allowed all boats in, and the 600 square inches was used because I wrote the rules (*Dictator!* WCN) and 36-500 did not have the ring that 36-600 seemed to have.

The experimentation can be total and complete or it can be using one of the many fine kits that are now on the market. A listing of the sources for 36-600 hulls would include Garret Enter-

prises (Starlet), P.O. Box 6421, San Diego, CA 92406, Victor Models (Tahoe 600) Box 2168, Downey, CA 90242, Model Boats and Things (Pro) P.O. Box 105, Collierville, Tenn. 38017, Blacks Boat Accessories (Diegan & Snipe) 4761 Niagara, San Diego, CA 92107. The types of boats that are suitable are just as numerous and creative as you would want.

The first ACCR (Annual Class Championship Regatta) that the American



Model Yachting Assn. held in the 36-600 Class was won by Tom Protheroe with semi-scale 36 inch Soling that he and Roger Grigsby worked on. Needless to remind those of us who sailed in that ACCR, Tom won six out of seven heats. Yours truly was the only one to beat him, and that was because his jib sheet hung up on the winch. The boat I sailed was a Pro, which is nothing more than a Starlet with additional rocker and a slightly wider stern.

The second year rolled around and guess who was not going to sail his own design but run the same type of a boat that won the year before . . . Yup, me. Guess who got beat by a well tuned Starlet . . . your right. So for the second year in a row it was second place. Well, back to the drawing boards. That is just what a lot of people have been doing, and the few tri-marans that have been out have shown a great deal of promise. The problem is that with its light displacement, the load that full size sails develop overpowers the hulls and they tend to capsize.

If you think because of their size the 36-600's would be slower than some of the bigger models, you are right . . . but the classes are not mixed, and when racing with each other, they are far more maneuverable than any of the other classes.

It is sometimes hard to be fair in judgment about what to write and how it should be done. Being President of AMYA does not help in that respect. AMYA will have a booth at the MACS Show, so if you would like to drop around and chat, please do so. Your AMYA dues of \$3.65 can be sent to C.H. Black, 4761 Niagra, San Diego, CA 92107. Any time you happen to be in Sunny So Cal you are welcome to call or drop by the pond in Mission Bay. Saturday is the day for sailing.

Just in case you did not know, the San Diego Argonauts will host the Annual Spring Sail Regatta on April 21 and 22.

If you need info drop me a line, P.O. Box 639, Escondido, CA 92025.

**FB-100 . . . . . Continued from page 17**

Speaking of servos, these new ones from Micro (Orbit) have a new Orbit designed Texas Instrument built IC which "increases speed, power, resolution, and finite control" - hey! That's neat, isn't it. Personally, I don't care about all of that optimizing, but when I read that this IC also reduces idle current and greatly reduces noise susceptibility, I get turned on about it.



**SANTA BARBARA ONE DESIGN.** More than five hundred sold - and #10 can still beat #500! Length 70 in., mast 72 in., sail area 1100 sq. in., displacement 28 lb. Prefinished fiberglass hull, deck, cabin and keel . . . . . \$165.00



**SOLING-M.** Scaled from the exciting new Olympic-class three-man keel boat. Length 50 in., mast 60 in., sail area 800 sq. in., displacement 18 lb. For American Model Yachting Association 50/800 "M" class racing. Prefinished fiberglass hull and deck, machined cast-iron keel . . . . \$125.00

**BOTH KITS** include finished Dacron® sails, spruce spar blanks, stainless rigging, brass fittings, and die-cast aluminum rudder. For two- or three-channel r/c operation with the Vortex sail control unit.



**SAIL CONTROL UNIT with gel/cell® battery and charger . . . . . \$75.00**

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I'm not the kind of guy who likes to look at my radio's output on a scope or measure hysteresis at zero position. Things like that are better left to the designers, in my opinion. Radios have really come a long way from the days of PUSH-PUSH-HOLD. Even the REED days were kind of funky by comparison.

I remember the day at Mile Square that the Smog Hog made its maiden flight. I couldn't believe that a .35 powered airplane was going to do it and survive but it did and how! Today, reliability is so high and performance so good that it is a real pleasure to be in the hobby. Still, some guys just don't have it. Heard about a fellow who built (?) an ARF, installed new radio gear and flew it (with help) 3 weekends in a row. The last flight of the 3rd Sunday was a wipe-out. When tested, the radio was found to have a dead battery. The poor guy had charged it the first time like the directions said and that was that. He didn't realize he had to RE-charge. Seems impossible for that to happen, yet it did.

Of course, things like that are not covered by warranty, but I'll bet that's one guy who doesn't pull *that* trick again!

Orbit's warranty is 90 days free service and 120 days on parts (material,

workmanship, etc.), but even with that, please don't set your transmitter on the exhaust side while adjusting the needle valve!

This new Micro rig looks good sitting in its plastic-foam shipping box and it really works, but the box doesn't fly too well, so I thought it would be kind of nice to put it into something like an airplane. So now we'll talk about the FB-100 (FB=Fun Bird). Span 56 in., wing area 610 sq. in., length 45.5 in., weight (less power and radio) is 3 lbs. 10 ozs. Engine recommended is a .45 (A .60 is better). Price \$89.98. High you say? Keep in mind that it is not a "rubber duck," but a rolled birch plywood pre-finished (acrylic enamel) big bird with things like; wheels already on the gear, gas tank and pushrods and horns already installed. Drill for engine, drop in servos, receiver and batteries, connect servos, center up and go fly. All hinges are in, the wing is in one piece and it's even trimmed in color (this one is blue) . . . you even get a matching prop spinner. The only other thing really needed is a canopy and some numbers if you want 'em.

Some guys I've known pour dope (colored) straight out of a bottle onto a wing and smear it around with a rag!

*Continued on page 46*

# The Great Age of Sail . . . Lives Again in these Authentic Scale Model Kits

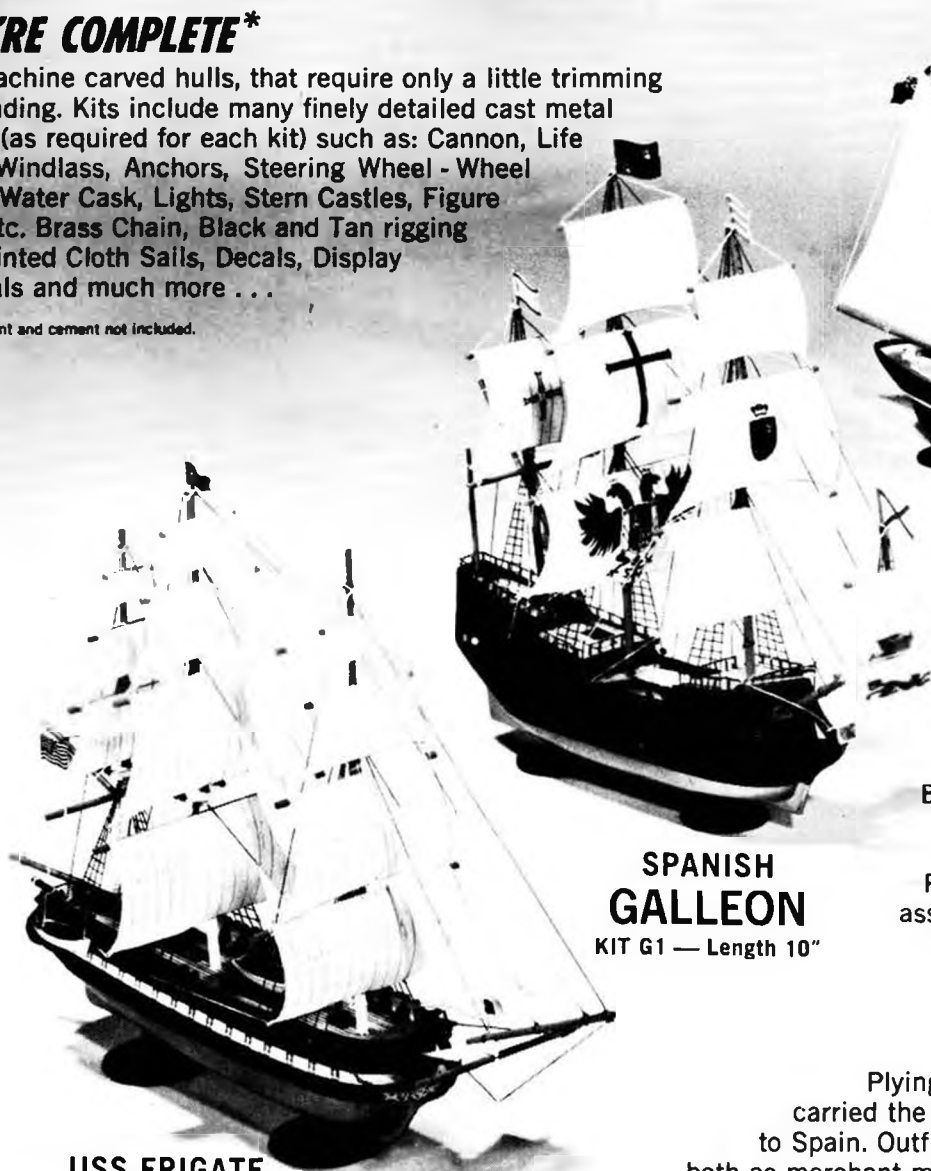
## THEY'RE EASY TO BUILD

We know it seems unbelievable, but it's true. New techniques in the heretofore difficult rigging installation and ratline making, are simplified so that almost anyone can produce a craftsman-like job. Density selected prime balsa wood is a real pleasure to work with, and the step-by-step plan is simple and complete.

## THEY'RE COMPLETE\*

With machine carved hulls, that require only a little trimming and sanding. Kits include many finely detailed cast metal fittings (as required for each kit) such as: Cannon, Life Boats, Windlass, Anchors, Steering Wheel - Wheel House, Water Cask, Lights, Stern Castles, Figure head, etc. Brass Chain, Black and Tan rigging line, Printed Cloth Sails, Decals, Display Pedestals and much more . . .

\* Dry Kit, paint and cement not included.



### USS FRIGATE CONSTITUTION

KIT G2 — Length 11"

### SPANISH GALLEON

KIT G1 — Length 10"

### SCHOONER BLUE NOSE

KIT G3 — Length 11¼"

## THEY'RE UNIQUE

Because such amazing detail and authenticity is achieved in kits that are relatively easy to build. Plans include full size, as well as assembly drawings for each step of the way. Authentic color scheme shows on full color kit box lid.

## THEY'RE HISTORIC

Plying the Spanish Main, the Galleons carried the treasures of the New World back to Spain. Outfitted with cannon they were used both as merchant men and warships . . . The Blazing Guns of the *Constitution* helped to establish our Nation. Now enshrined in Boston Harbor, it is the oldest commissioned vessel in the U.S. Navy . . . Built by Angus L. Walters the *Bluenose* was one of the finest Schooners to take the water. It came to world-wide fame racing against the *Gertrude L. Thebaud*. *Bluenose* captured the hearts of U.S. and Canada to such an extent, that today it is on the back of every Canadian Dime.

## THEY'RE ONLY

**6.95**  
ea.

- CARVED WOOD HULLS
- CLOTH SAILS
- CAST METAL FITTINGS

## AND THEY'RE AT YOUR DEALERS NOW

GET OVER AND SEE THEM . . . BUY ALL THREE!

You don't have to STAND OFF to admire this

# CITABRIA

## SPECIAL THANKS

The beautiful Citabria is manufactured by one of the oldest and respected names in American Aviation, The Bellanca Corporation, who so graciously provided us with the plans, photos and details of the full size aircraft. With this illustrious lineage, it is not surprising that the Citabria is just about unbeatable as a fun plane. Primary trainer, or for Aerobatics.

## CITABRIA IS FOR YOU

If you're a Sport Flier, if you have a feeling for Scale, if you love R/C\*, then this is your ship. It's a beautiful machine that builds easy—goes together fast—plenty of room for any equipment—rugged for hard use—flies great—and is just about the right size.



Span 54" Area 415 sq. in. Length 36" For Engines .23 to .35 Scale: 1.61" Equals 12.0"

## ABOUT THE KIT ITSELF

This kit is a real joy... Balsa Wood is the finest grade, density-selected and sanded to micrometer tolerance; as is the imported Finland Birch Plywood. Every part is numbered to insure fast and accurate assembly as shown on the easy step-by-step plans.

\* Can be flown Control Line too—instructions on plan

## THE FUSELAGE

Fuselage sides are die cut full length. Cabin sides and inner doublers are plywood as are the firewall and landing gear bulkheads. It's easily assembled with die cut balsa bulkheads, nose block, formed music wire landing gear, custom dural engine mounts, etc. Cowling and wheel pants are rugged plastic.

## WING AND TAIL SURFACES

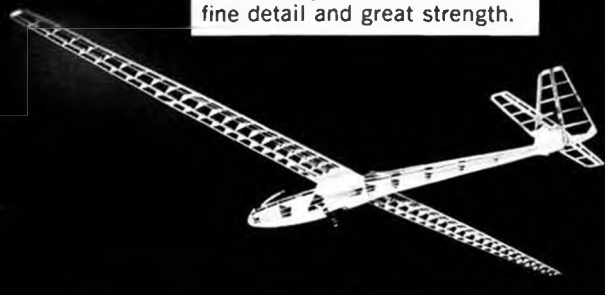
Complete wing is built on work bench without having to remove it—so it's flat and warp-free. Parts are die cut and carved. Balsa sheet cover makes for tough wing. Wing is installed like it ought to be—with dowel pins and nylon screw in wood nut-block. No unsightly rubber bands to deteriorate.

break or slip. Rudder and Stab are die cut sheet for simplicity and no warp. Included is all the linkage hardware: pushrods, aileron and elevator horns, bellcranks, clevis, connectors, etc., plus giant authentic decals, plastic windows, etc., etc.



## STRUCTURE

Frame Photo reveals the excellence of the design engineering of the kit. Although structure is relatively simple, it is one of fine detail and great strength.



SPAN: 87 $\frac{1}{16}$ "  
LENGTH: 37 $\frac{3}{4}$ "  
WEIGHT: 12 oz.  
SCALE: 1.5" Equals 12.0"

KIT E7  
**10.95**

## GREAT FLIGHT PERFORMANCE

A real soaring machine is this model Cirrus. Eiffel 400 soaring wing section seeks out and takes full advantage of every thermal current. Can be flown Tow Line - Free Flight, Single Channel or pulse R/C for Slope and Thermal Soaring. Large Cockpit area provides ample room for R/C Equipment.

## A FINE KIT

Top quality Balsa used throughout. All parts accurately die cut and numbered to insure fast accurate assembly, as shown on the detailed plan. Also included are shaped trailing edges, finished nose cone, giant clear canopy, authentic decals, full size plans with step-by-step drawings and instructions, etc.

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If no dealer available, direct orders accepted—with 10% additional charge for handling and shipping. 160c minimum in U.S., \$1.25 minimum outside U.S.  
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The Northfield-Ross 60-Twin: Compact. Lightweight. Powerful.

And—most important of all—so vibration-free that it cannot possibly cause radio failure.

It's the first twin-cylinder engine that actually performs the way a twin-cylinder engine *should* perform.

In fact, it's everything you expect a twin to be (only no other twin is) because it was designed by Lou Ross and is manufactured by a company that's famous for high precision manufacturing.

And, incidentally, the Northfield-Ross 60-Twin has two big relatives that will give you even more vibration-free power: the Rosspower 4 cylinder (1.2 cu. in.) and the Rosspower 6 cylinder (1.8 cu. in.).

We'll be happy to send you complete information and a free brochure about all three Northfield-Ross engines.

Just write to Northfield Precision Instrument Corporation, 4400 Austin Blvd., Island Park, N.Y. 11558. Tel.: (516) 431-1112.



## FB-100 . . . . . Continued from page 43

Usually, these fellows are strictly flyers (takes all kinds) and the quickest way they can throw one together the better. Well, to them this Fun Bird will look like a 25 coat lacquer job. I personally like a good (not perfect) paint job, and I do a better job on my planes than is evident on this plane, but I'm old and picky, so go to a hobby shop and look at one to make sure. (I did.)

Enamel applied to plywood usually gives a good long lasting finish, if properly applied. This fuselage is coated with enamel alright, but there appears to be no attempt at filling the grain prior to enamel coat. This condition is very noticeable on the 1/4 in. balsa tail feathers. Most paints when sprayed can be rubbed or sanded to get rid of dust particles that settle into the surface, but I wouldn't want to try on this one because of the open grain. Wing is very nice, structurally speaking. It looks good on the strength side of the balance, but on the alignment side, they slipped a little.

I would not mount one of my 'good' engines on these motor mounts. One of them is off approximately 10 degrees with relation to the other. Kinda rough on bearings. Ground down with rotary file 'till engine bedded nicely, it looks good.

The wheels are retained on the wire axles with cute little gray plastic gizmos, but they are very tight (the wheels). They won't turn with the weight of the aircraft when pushed on concrete. Replaced the plastic with good old wheel collars. Too much glue on the gizmos, but a good idea.

The smart boxes and batteries went in with no trouble, lots of room in the fuse for just about any size gear, plus a couple of "BIG MACS" and an order of fries.

The paint job on the wing is excellent . . . smooth as a baby and nice and thick. There is a 2 in. strip of covering material wrapped around the center section prior to painting, but it is loose in one place for about 1-1/2 inches. Luckily, it's on top and will be inside, away from all of that horrible engine sludge. The Aileron hinges are well done - no slop, plenty of support, but one is quite free and the other has some drag during movement. It's alright by itself, but seems tight because the other one is so free and nice.

There is sponge rubber around the fuselage-wing mount area that was replaced with Silicone Rubber . . . the sponge would soak up all kinds of fuel and oil goop and be a mess.

Out to the field on mid-afternoon Sunday, put it all together and started

up . . . adjusted Enya 60 for barely 2 cycle 'cause of new sleeve and ring. Taxiing is very precise and takeoff very predictable. Plane nosed up and I had to give almost full down trim, but was then hands-off stable. Engine a little rich, so careful for a while . . . leaned out later and every maneuver was done . . . very responsive in all axes.

Ticked the prop on landings, so new prop, fuel and leaner setting on needle valve and off for a beautiful T.O. and climb out and again a very responsive and easy to fly bird.

Power is needed on this one . . . a tired 60 won't do. A KB45 is OK, or a new and good 60. Nothing less for full performance.

This ship should last a very long time due to very strong construction. It looks good, flies good and will undoubtedly outlast a rubber duck by far.

The radio is so nice, I bought one myself. Everyone should have an Ochroma Logopus SW. ●

## Sterling . . . . . Continued from page 25

tion took me as long to do as it did to build the entire fuselage! I even traced each section on tracing paper, using it as a template . . . never again! I should have under-cut a couple of bulkheads and used sheet balsa instead. One thing for sure, it is certainly strong! All that

remains is to bend up the tail wheel wire and glue it in place.

I built the stab and rudder next, with one slight modification. I laminated the surface outlines using basswood. This is something I happen to prefer to do even though, unlike in many kits, the outline parts are not excessively wide. However, laminating wood makes a very strong, warp resistant structure. The tail assembly took no time at all, even though I hinged the elevator and rudder for trim purposes . . . and perhaps for the added realism.

Now for the wings. No matter what model I'm building, the wings come last! Wings are wings, and to me, not very enjoyable to build . . . but to each his own. I looked at the drawings carefully then punched out all of the parts. The construction of the wings were very well engineered, and to my surprise, went together faster than any wings I have built in years. Everything fitted perfectly!

At this stage the entire model was given a thorough sanding and sub assembled for photographic reasons . . . including the engine. Next month I will report on the finish and flying of the model. This time of year the grass is tall and green, just waiting for those first test flights. ●

C/L . . . . . *Continued from page 41*  
1/2A size planes. Beginners are given the option of learning either two-line or Mono-Line.

Left-hand propellers are stressed for the 1/2A flyers. They sure do make a difference on takeoff and flying in the wind. Even the plastic Cox PT-19's are now equipped with them. In case you are not familiar with the different sizes of left-hand props, here is what is currently available: Grish (yellow nylon) makes a 6x3, 6x4 and a 5-1/2 x 4; Cox (nylon) makes a 3 bladed 5 x 3-1/2 and a 4-1/2 x 4 and Kirn-Kraft makes a 5x5 (glass filled nylon).

Ten club members are already flying their 1/2A planes on Mono-Line. They fly on a line 45 to 50 feet long, and are using the Stanzel 1/2A Stunt-Master control unit and ball bearing handle. The solid music wire flying line has a diameter of .014, .016 or .018, depending on how much control they want. Two members can fly 1/2A Mono-Line stunt (very good) and several others are getting started.

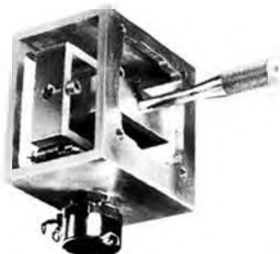
You really have to see this Mono-Line thing to understand what it is all about. Mono-Line is not new. It has been around since 1950, but has not been actively promoted since 1957. If

# CONFIDENCE

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Here are two good reasons

## 1. Exclusive Orbit Solid Open Gimbal



ABSOLUTELY RIGID ASSEMBLY

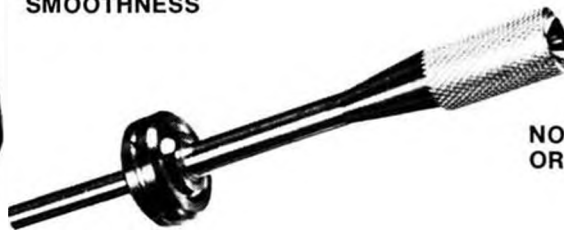
UNMATCHED PRECISION

Fork, cage, and frame are precision machined from aluminum extrusions. No bent metal, no plastic, no forced fit. Every muscle twitch becomes a command.



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METAL TO METAL SMOOTHNESS



NO DRAG OR SLOP

Hardened steel ball in a low carbon steel race with a tolerance of less than 1/1000 of an inch gives you precision unmatched in any other closed gimbal.

One look tells you why they're better.  
One flight tells you how much better they are.

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Over 1½ years of experimentation and testing by K&B has produced this superlative 2 cycle oil... x2c... for use in model engine fuel in place of castor oil. It has all the good features of castor oil yet none of the bad ones. x2c is clean-burning, leaves virtually no gunk build-up in the engine, or discolored film or stain on your paint job. You'll be flying in (with) ecstasy! It is consistent in quality, chemical composition, and in viscosity from year to year. Unlike castor oil it never varies.

K & B 100 and K & B 1000 with castor oil will remain in the line.

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Pints	\$1.15	\$1.60	\$1.15	\$1.60	—	—
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a person has never flown a control line plane before, he will learn Mono-Line quicker than he will two-line. These new club members are proving it. The biggest reason for its success is that there is less skill involved in flying Mono-Line than two-line. This is due to the fact that control does NOT depend on a taunt line. You always have positive elevator control... even in the wind.

If you are interested in learning more about Mono-Line flying, write to Victor Stanzel Company, Box 28, Schulenburg, Texas 78956.



**Plug Sparks . . . Continued from page 40**  
are using 3/16 or 1/4 thick epoxy board for firewalls. This is the same material used in circuit boards, and is available at most surplus houses. It's easy to work, completely fuel resistant, and break proof.

Many of you may remember that about two years ago, Tom Cope, of Issaquah, Washington, started kitting the New Ruler designed by Henry Struck in 1940. Just about as soon as it came on the market, it went off, and since it was a very popular model, you are probably wondering why. It was simply that inflation had struck again!

Received word from Tom that because of three price increases in balsa and two on boxes, he just couldn't see his way to raise the price of the kit, and so decided to back off.

Just received word from Dick Dwyer that the Arden .099 and .199 timer housings should be available by the time you read this, so if you are one of the many who have already sent in your money but as yet haven't received your housing, they're on the way. The company which is making the castings for the REMCO 29 is also doing the housings for Dick, and since it is currently swamped with orders for its other industry products, it has just taken more time than was first expected. This also means that the REMCO 29 will soon be on the market, which gives us another goodie to wait for.

Tip for the month. If when doping silk you end up with excess lacquer hanging down on the inside of the covering material, try this the next time... Brush the first two coats on while holding the work upside down. This way the dope will run back to the outside, where you can keep brushing it until the silk is sealed enough not to allow it to soak all the way through. Try it, it works...

*(An alternate method... somewhat of a compromise, but requiring less physical dexterity, and avoiding the possibility of getting doped eyeballs... is to hold the surface in a vertical position, while brushing lightly and dipping often. Pressing down with a loaded brush is the main cause of run-through. wcn) ●*

**R/C Cars . . . . Continued from page 24**  
drivers were in the same class. Starting positions would be determined by qualifying. Mike Morrissey was one of the first up to qualify and showed everyone how the experts do it. All racers got 4 timed laps in a row, with no practice laps, and the best single lap of the 4 counting. Dean Brown, who was doing a fantastic job on the P.A. system, announced that if anyone could turn a 20 second lap on this track, he would be the one to beat. Just then Mike turned a 19.31 sec. lap, which really got everyone talking. With 33 qualifiers taking their turns one by one, qualifying dragged on for quite a while, but Dean Brown did such a good job of keeping the huge crowd of spectators informed of exactly what was happening and also exactly what our sport was all about, that the whole qualifying time was very interesting to the spectators and participants.

AVAILABLE AT YOUR DEALER MARCH 15, 1973

DON DEWEY'S

# WAYFARER

\$ 64.<sup>95</sup>

SUGGESTED RETAIL

Kit includes wheels,  
Hallco gear tank,  
Bellcranks, etc.



Span : 52" (both wings)  
Length : 43"  
Weight : 5-5<sup>1</sup>/<sub>2</sub> lbs (with RC)  
Engine : .40 - .60

Engineered from Don DEWEY'S drawings which first appeared in the February 72-issue of RCM, this new SVENSON-kit carries the designer's approval. Everyone who has ever flown this machine agrees with Don's words : "One of the finest bipe's you'll ever fly..."

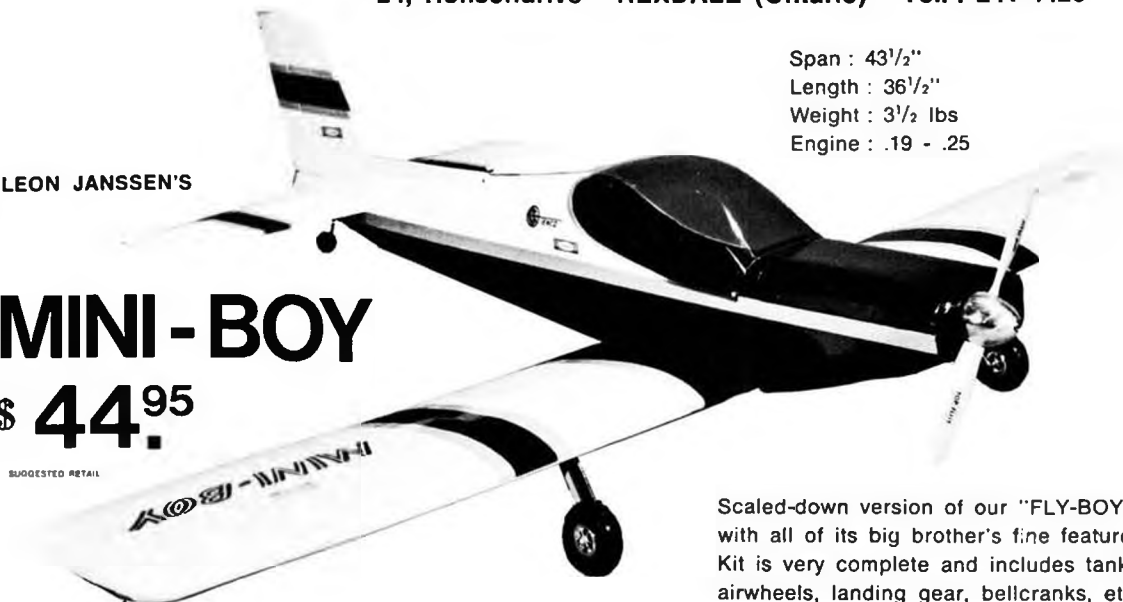
AVAILABLE IN CANADA FROM HOBBY INDUSTRIES  
24, Ronsondrive - REXDALE (Ontario) - Tel. : 241-4426

LEON JANSSEN'S

# MINI-BOY

\$ 44.<sup>95</sup>

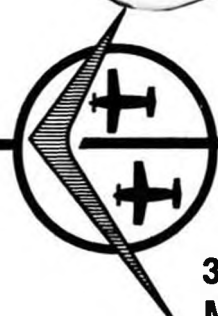
SUGGESTED RETAIL



Span : 43<sup>1</sup>/<sub>2</sub>"  
Length : 36<sup>1</sup>/<sub>2</sub>"  
Weight : 3<sup>1</sup>/<sub>2</sub> lbs  
Engine : .19 - .25

Scaled-down version of our "FLY-BOY" with all of its big brother's fine features !  
Kit is very complete and includes tank, airwheels, landing gear, bellcranks, etc.

TWO NEW SUPER-KITS BY SVENSON : SEE THEM  
IN COLOUR IN SVESON'S ST-73 CATALOGUE,  
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Kit includes beautiful fiberglass fuselage, engine mounts, firewall, bulkheads all installed. Glaskin wing and stab, all balsa pre-cut to shape; instructions. Retract cutouts fit most units. Orders must specify engine upright (recommended) or side-mounted, fixed or retract gear.

ATTENTION Class A & B Pattern flyers: here's a great opportunity — win 1st place flying your Hi-Lo in any AMA-sanctioned contest during 1973 and we will send you \$20.00 or a \$20.00 credit on any of our kits. Offer limited to one win per person. Send small photo of yourself with Hi-Lo and note from CD verifying your win.

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- 1st Amateur Road Race
- 1972 National Champion

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Mike's time lasted for over an hour, until Chuck Hallum really drew everyone's attention as the 1972 National Road Racing Champion lowered the record to 18.94 sec. Chuck's record only lasted about 10 minutes though, as Earl Campbell completely shattered the record with an unbelievable 18.14!

The six fastest qualifiers went into the main event, the next six went into the semi-main, and the rest of the field ran in heats with the 1st and 2nd place cars from each heat going into a consolation race. Although Bryan Bowles' qualifying time wasn't too good, because of too much horsepower, he easily won the consolation race with his Marker car. Joel Abler's Taurus was 2nd, Dick Norsikian's Nor/Kar 3rd, Bob Donckle's Nor/Kar 4th, Bob Gebel 5th and Gary Grossenbacher 6th.

The 60 lap semi-main turned into a 2 car race with Roger Curtis and Matt Azzara and their Associated cars lapping the field while dueling with each other. They were always within 5 feet of one another and switched the lead back and forth a few times until Matt's radio went out, dropping him out of the race. Roger then had a comfortable lead but the engine died on a pit stop! It ended up a close race with Roger Curtis 1st, Jack Garcia's Nor/Kar 2nd, Harold McCoy 3rd, Roy Cariola's Thorp car 4th, Matt Azzara 5th and Jerry Roahauge

6th.

The race everyone was waiting for was up next . . . the main event. Earl Campbell took off in the lead after passing 3 cars in the first turn. Chuck Hallum followed right behind and Mike Morrissey was a little behind Chuck. After 12 laps, Mike dropped out with some loose screws in his chassis plate which were starting to make the car ill handling. Campbell's closest competition continued to be Hallum, but on lap 52 Hallum dropped out with a broken steering bellcrank from a crash. Campbell's closest competition then was from John Thorp, who was running the 75 lap race on one pit stop! Although Campbell had to make 3 pit stops, he still won by over 2 laps with Thorp 2nd, Don Amedo's Taurus 3rd, Hallum 4th, Dick Camp's Thorp 5th and Mike Morrissey 6th.

We were honored to have the Mayor of Buena Park, Mayor Ralph Hines, at our trophy presentation. Miss Buena Park, Jenny Webb, presented all the winners with their trophies. The R/C Roadrunners Club would like to thank the following manufacturers for their donations which helped to make this a great race; Associated Electrics, Cars of Stars, Delta Systems, The Pit Stop, RS Systems, Taurus Co., and Thorp Manufacturing.

**R/C Roadrunners Main Event Results**

NAME	QUALIFYING TIME	LAPS	CAR
EARL CAMPBELL	18.14	75	Associated
JOHN THORP	19.69	73	Thorp
DON AMEDO	19.95	70	Taurus
CHUCK HALLUM	18.94	52	Associated
DICK CAMP	20.08	50	Thorp
MIKE MORRISSEY	19.31	12	Taurus

All cars were equipped with K&B .19 engines.

**F/F . . . . . Continued from page 36**  
 it up . . . the entire sheet will come off with ease! If it tears, simply start another section and pull that off. Try it!  
**NEW AIRFOIL BOOK . . .**

From Italy. Called "ASA Test Report 03-73, Airfoil Sections for Flying Models;" features MEG low speed wind tunnel tests on the "most commonly used model sections" as well as newer airfoils, such as Eppler and Bogart. Sounds like a worthwhile addition to your modeling collection. Price is \$6.95 (U.S. Postal money order or International check) per copy, Post paid. If you order through your club, there's a free copy with every 10 ordered. Send to: ASA, Associazione Sportiva Aeromodellistica, Via S. Giovanni Bosco 21, 20081 ABBIATEGRASSO, Milan, Italy.

Contributions to this column are welcome: You don't even have to be an Easterner to apply! Send c/o Model Builder, or direct to Ron Evans, 83 Blake St., New Haven, Ct. 06511. ●

**R/C Pylon . . . Continued from page 11**  
 Bob Smith's Miss DARA. I wouldn't be surprised to see more one-piece airplanes this year. Seems as though one-piece and high aspect ratios are the way to go!

Stafford's new "Rickey Rat," which will go into production later this year, is exceptionally clean and well designed. The bird made its debut at the Winter Nationals in Tucson last year and immediately established itself as one real sensation. With only one or two test flights on the new plane, Jack finished



a very credible 5th overall, with his best time at 1:28. At the last Formual I race of the season at Whittier Narrows, Jack was clocked between the pylons at 189 MPH! (*Maynard . . . Do you believe? wcn*) It looks as though Jack really did his homework well when he designed the wing and all the trick goodies on this bird.

Formula I season officially begins in the Southern California area in April. Next issue will have more Formula I coverage and a little about engines.

Now let's talk about Quarter Midgets! They are really at it!! The QUARTER MIDGET RACING CLUB, an exclusive club for participating Quarter Midget racers, is scheduled to host twelve races this year in Southern California.

January results at Mile Square, Fountain Valley, California, 1-28-73:

1. Chuck Brown, Minnow, Supertigre.
2. Henry Bartel, House of Balsa Shoe-string, OS MAX.
3. Paul Lorringer, Stafford P-51, Supertigre.
4. Ramzi Thomas, J&J P51, Supertigre.

February results at Mile Square, Fountain Valley, California, 2-18-73:

1. Bob Johannes Sr., Minnow, K&B.
2. Bob Adams, Ballerina, OS MAX.
3. Paul Strencell, Mirage, Supertigre.
4. Chuck Brown, Firecracker, K&B.

A little about the Quarter Midget engines being used by QMRC: There are basically three, Supertigre, K&B, and OS MAX. K&B 500 fuel is used exclusively at all QMRC races. With a 7 x 6 Top Flite or Power Prop, the static figures on a standard day will be around 15,800 for the ST. The K&B will be around 16,200 with the OS checking in around 14,000. The next time you take static readings, try 5 props of the same make and size. You will find variations of up to 900 RPM. The above figures represent readings on average, well run-in engines.

Everyone knows that even with a good clean ship, it's "what's up front that counts" . . . horsepower! What makes the Quarter Midgets unique is that they must idle (at QMRC races). This will keep them stock, so to speak. I have heard that many engine specialists claim they can groom an engine to the point that it will really come on and still idle . . . critical deck height, blue-printed tolerances, and what have you! All of this can be done and still go undetected under an inspection. Maybe and maybe not. That depends, in my estimation, on who does the inspecting! The tentative national rules state, "stock out of the box." I think at this time,

that we should stick to this rule to the letter. I believe that it would be detrimental to the spirit of the sport to allow alterations.

RACE . . . That word again . . . let's use the Quarter Midgets as what they are . . . STOCK (as possible) and FAI as OPEN (as possible). With more people doing *some* kind of Pylon racing, we will all benefit in the long run.

Quarter Midget aircraft rules give the modeler almost a free hand at choosing his favorite design, as long as it meets the minimum dimensions set forth in the rules. In Southern California, the majority of planes are P51s, Goodyear types, and planes of the "Golden 30's." All are stand-off scale and can be used as well for sport type flying.

In QMRC, as well as MARCS and other Quarter Midget Clubs, there are racers who like to scratch build their models: Designs such as Norm Bell's "Chief Oskosh," Nobora's "Mongster," Dick Rebenstorff's "Brown Special," Paul Strencell's "Mirage," Chuck Brown's "Firecracker," Ray Floyd's "Rivets," Cary Weyl's "Caudron," Selwyn Kaplan's "Smoothie," Don Barton's "Pogo," Kent Thomas' P-39, Ken Holden's "Swea' Pea," Paul Lorringer's "Shark," Paul White's "Minnow," Don Panek's "Ole Tigre," Carl Maas' P-40Q, and of course, the beautiful Minnows of Bob and Robert Johannes. Quite a variety!

The kits being used are mostly Stafford's P-51, Don Dombrowski's House of Balsa Shoestrings, Rickey Rat and El Bandido, J&J's P-51, and a few Hot Line Cassutts. Looking any time now for Bellancas, Commanches and Bonanzas!! . . . Spectator appeal!!

The planes usually weigh in pretty close to three pounds, ready to race. It's still pretty hard to build one right on two and a half pounds.

So much for RACE this time. I would appreciate information covering any kind of Pylon racing in your area. Any comments, pro or con, or suggestions about our sport . . . I would like to hear! My future articles will cover all types of Pylon racing. I'll need your help . . . so HELP!! Any information you may have please mail to: Tom Christopher, 4771 L La Villa Marina, Marina Del Rey, California 90291.

Let's not be "All Flap and No Throttle." Let's RACE!!

Hannan . . . Continued from page 30 dimensions can offer more durability than most other woods. For landing gear and wing struts, it is virtually the

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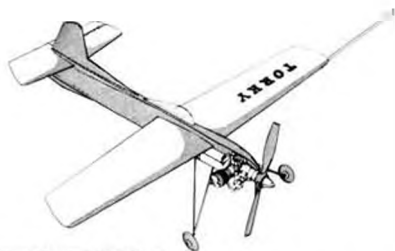
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equal of music wire (especially today's inferior variety), yet can be glued with ordinary model cement. Additionally, thin sections of bamboo can be formed over a heat source. Admittedly, experience is required . . . about like stretch-molding canopies . . . but the end results are worth the effort.

#### WHAT'S YOUR LINE?

It is surprising the number of occupations to be found among our readers. Alex Toth is a professional cartoonist . . . his WW I aircraft strips feature *genuine* machines, including off-beat types such as the Hansa-Brandenburg, Dr. Morton Grosser was trained as an

engineer, but it also an author, who's latest book is a delightful fiction piece entitled "THE SNAKE HORN." Many in our audience are teachers, including Bill Warner, Fernando Ramos, Clarence Mather, Jed Kusic, John Brown, Ronald Tweet, and Bob Thompson. There are also many doctors and dentists in the model building ranks. Bill Bigge, of microfilm and indoor dirigible fame, works for The Bureau Of Standards, in Washington. Ed Toner (and catch these initials) C.G. Scott are airline pilots. Gordon S. Fairley is a missionary pilot in Africa. A large percentage are artists, illustrators, or draftsmen. Anything more unusual out there?

#### UP IN THE AIR JUNIOR BIRDMEN!

We have mentioned Richard (hang glider) Miller in previous columns, but there is ANOTHER Richard Miller who teaches a model aviation class in San Ramon, California. These lucky youngsters can study THEORY OF FLIGHT, MODEL CONSTRUCTION (both indoor and outdoor), FLYING AND ADJUSTING, and even participate in club competition. Let's hope that more schools will offer such a program.

#### BOAT CLUB SHELLS OUT FOR PEANUT CONTEST

According to W.C. Young, the Bakersfield Blue Dolphin's Peanut Scale contest was a roaring success. Turnout was excellent, and a large variety of aircraft appeared, including: Bleriot Canard, Pietenpol, Piper Cub, Glenny and Henderson, Miles M.18, Demoiselle, Bellanca, Farman Mosquito, Citabria, Grey Ghost, Eastbourne, Cierva C-4 (how did that 'giro get in there?), Pilatus Porter and a Longster. Truly a remarkable collection, for one contest (and for a model boat oriented club, too! wcn).

#### THAT VINTAGE LOOK

Barry Berman, of Berman's Hobby Center, reports that instant coffee makes a good dye to give model tissue that

aged look which adds so much to models of pioneer aircraft. (Wonder if it keeps the pilot awake?)

#### AN INVITATION

From Clif Osborne, Chillicothe, Ohio, to the editor: "Hello Bill: In January 1973 issue of your mag I came across a note in Hannan's Hangar of the Maryland Kite Society. Did you know that there is an American Kitefliers Association in this country? It is an organization to promote the building and flying of kites and has members scattered across the world. Its address is American Kitefliers Association, Silver City, New Mexico 88061. It prints a quarterly publication called "Kite Tales" and is a real newsy publication on this wonderful hobby and sport. Its dues are \$3.00 per year and this entitles one to membership and four copies of the KT.

"How about a plug in one of your issues for this, and still better, how about you and Anita joining it. Bob Ingraham, the president and editor would be glad to hear from you."

*(We've been asked to "go fly a kite" on many other occasions, but this was certainly the most pleasant and sincere invitation of all. wcn)* ●

**Monocoupe . . . Continued from page 31** surface to be covered. If there has been a temptation to leave out corner gussets, it should have been overcome. Make sure the contours everywhere are correctly sanded to shape before covering . . . there is no way to do it afterwards. Don't proceed with covering until the model is completely sanded.

In the interest of wasting as little tissue as possible, cut out all the necessary pieces, using the plans as a guide. Make the pieces about a quarter of an inch oversize on all sides of the part.

Now thin out a small quantity, (a thimble full or so) of white glue with an equal quantity of water. This will be used to attach the paper to the frame-

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work. There is one caution to be observed, most tissue available will work alright with white glue. However, some kinds will almost disintegrate. The latter type may be attached with dope. So, if you are not sure of your material, try a sample first. On most materials, the white glue will penetrate better and attach the covering quicker.

The general method of getting a good covering job is to carefully apply a thin line of glue around the outline of the part. Then lay the covering lightly in place on top of the part. The grain of the tissue, if any, should go lengthwise of the part. (*You can check the grain direction by tearing a small sample. With the grain, the tear will be more or less straight. Across the grain, it is impossible to tear in a straight line. WCN*) Now gently stretch the tissue lengthwise and rub it gently down on the ends of the part. Then stretch the tissue crosswise of the part and rub it gently down on the edges. The idea is to get the tissue to lay as smoothly as possible on the part without getting it too taut in any one place. If your fingers tend to get sticky, it is good to have a damp rag handy to wipe them on to remove the traces of glue. Now set the part aside to dry. Go on to do the same thing to one side of all the other parts.

After the parts are dry, use a sharp razor blade to trim off the tissue around the edges of each part. Now proceed to cover the other sides of the part in the same fashion as you did the first. When these are dry you use the blade to trim off the excess . . . except on the outlines of the wings and tail . . . where the tissue is trimmed to extend about an eighth of an inch beyond the edges and then is folded over and glued down so the edges are covered and therefore colored to match the rest of the surface.

Root ribs, which will be cemented to the model on final assembly, should not

be covered with tissue.

Generally no internal parts are cemented to the tissue, however in the case of concave surfaces, such as undercambered ribs on the lower sides of the wing, it will be necessary to put a thin line of glue on each rib and then press the tissue carefully down in place as you stretch the tissue smooth.

Now it's time to shrink the tissue to give that final smooth tight surface that is desired. This is done by lightly wetting the tissue and letting it dry. It's best to use a very light mist of water. The tool I use is an old spray deodorant plastic bottle that you squeeze to get a mist. I spray a mist of water vertically upward and then pass the part under the falling mist. (*How about that!? WCN*) It is unnecessary to get the tissue to looking wet. It should only get damp enough to sort of sag a little. Ideally, the tissue is damp but the structure has not been wetted. A wet structure will dry out last and thus will be easy to warp . . . and *will* be warped . . . by the shrinking tissue.

When the tissue is dry, inspect the covering. If there are places that are unshrunk or wrinkled, wet them again and let dry. If they still exist you can carefully cut out the offending area and add a small smooth patch . . . or . . . you can ignore a small wrinkle, secure in the knowledge that usually you are the only one offended by a small wrinkle on an otherwise delightful model!

If your Peanut scale model is to be flown only indoors, it is not absolutely necessary to dope it. Dope adds weight no matter how lightly applied, and thus tends to decrease indoor duration somewhat. For handling reasons, it's usually nice to put a light coat on the fuselage even if you leave the rest of the model undoped.

Dope tends to shrink the tissue even a little bit more. The thicker the dope, the worse this effect can be: And the

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result, if care is not exercised, is wings that look like propellers!

I usually thin out my dope about half-and-half by volume with dope thinner. Then, using the wide brush, I gently brush one coat on the wings and two on the fuselage. This is generally enough, here in the southwest part of the U.S.A., but in wetter climates, more dope may be necessary. If so, to keep from warping the model, its structure will have to be stronger and heavier or the dope will have to be plasticized to keep it from getting too tight.

At least the following items can be used to plasticize dope: Castor oil, oil

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of wintergreen, oil of peppermint, or camphor. Some other things can also be used but I've only used those listed. A little less than one percent of plasticizer will do the job. Camphor must be dissolved in thinner first but is the most waterproof. Wintergreen or peppermint smell the nicest in a snowbound kitchen!

I've never tried it, but Peanut oil might work and it seems most appropriate.

Have fun with Bill and Walt's Monocoupe 110 Special. ●

**Snofly . . . . . Continued from page 33** there were three downers. It was still to be anybody's race.

By the time Round Three started, the temperatures had climbed to a torrid 22 degrees, which was last year's high! This is improving each year. The sun was still shining but lift was again becoming scarce. Ken Bates, from Romeo, Michigan, flying an Astro Flite A.S.W. 17, managed to find enough lift to come within one second of his target time. Ken missed all three spot landings, but he still gathered enough points, 797, to hang on to first place. Jack Hiner found some of the rare lift for a good third round flight. Jack misunderstood his timer and dove his Cumulus out of the thermal a minute early. He managed a total of 763 points for a solid second place. Earl Pell, flying his five year old modified Snipe I, put three consistent flights together plus two spot landings to take third place with 688 points. Just six points back of Earl, in fourth place, was Ray Vandierdonck, 682. Ray was flying his beautiful 13 foot Nimbus, the same ship with which he won the Nats last summer. Dick Chambers made his long trek up from Willard, Ohio worthwhile

by taking fifth place with a score of 668. Dick was flying an Astro Flite ASW 17.

Five juniors were entered, and boy, what a crop of young soaring pilots we're raising out here in the cold country! Jeff Mrlik not only won the Junior Class, but was third in overall standings with 721 points. Second place in Junior went to Jason Josaitis with 668 points, good enough for sixth overall. Junior third place and tenth overall was Kevin Pearson with 639 points. Jeff and Jason were flying Olympic 99's and Kevin was flying a Nimbus. Am I ever glad we separate the men from the boys in our contests. At least it gives us men a chance!

A wide variety of sailplanes were flown, with about a 50 - 50 split between kits and homebuilts. Only one of the medal winners had other than rudder and elevator, and that was spoilers on Ray Vandierdonck's Nimbus. It could be that most flyers left their fancy ships at home. We'll know for sure come the warm weather. There were no cold weather radio failures and only one mishap. Junior flyer Bill Modic folded his wings on the launch. Bill received the award for the 'days worst luck,' an E-Z Jaun sailplane kit. Better luck next time, Bill!

To those of us who fly throughout the winter months, the Snofly contest is just another Sunday, with one exception; that exception being that it brings together many enthusiasts who normally would be seen only during the warmer months. The spirit that prevails is, "Who cares how cold it is . . . how much snow is on the ground . . . or how much lift there is . . . we're here to have fun and fly hard and that's just the way it happens."

For those die-hard sailplane enthusiasts within the driving distance of the Detroit area, keep in mind the motto of the Snofly contest . . . "We wait all summer for this one!" ●

**R/C Report . . . Continued from page 15** Editor had his picture in the magazine. We'll have to dig up one. If memory serves correct, maybe Bill N. has one of me or maybe us together. If so, you can easily tell us apart. I'm the crazy one. *(That won't help! wcn)*

Seriously though, we've had some people write and say, "Put your picture in the magazine . . . we want to see what you look like . . . anyone . . . anybody who writes like you do must be crazy." Well, we'll try to find a picture somewhere . . . only one on hand right now is one my Dad took back in the late '30's, showing me with an old Comet Zipper. We've changed a little since then . . . ●

**Casburn . . . . . Continued from page 16** foam.) The seam is then covered with a strip of glass cloth or pinking tape. I used the latter since it was provided in the kit, and secured it to the wing with polyester resin. It wasn't until after I had applied the tape to the wing using the polyester resin, and particularly when it didn't cure, that I found out the epoxy and the resin do not mix. So, I had many areas that were still wet long after the curing time. I remedied the situation by applying Ambroid cement over the wet areas, and this did the trick. *(Who can explain that! wcn)*


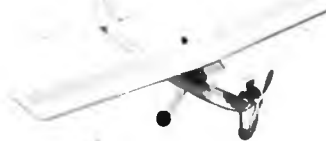


The servo compartment was then balsa lined and the hardwood servo mounts added. The wing tips are cut at an angle and so are covered with vinyl furnished in the kit. Epoxy is recom-

mended, but I found that contact cement worked much better since I tried it both ways. Slots for the landing gear wire had to be cut from the vinyl in the appropriate place, and the usual hole in the landing gear block made a little deeper. Two holes in the center section of the leading edge had to be made to accommodate 1/4 inch dowels that act as the front hold down, and a plywood template is furnished, which will later be added to the fuselage. With the exception of the ailerons, the wings are complete. The landing gear will be put into place after trim painting the wing.

The fuselage is also quite easy to assemble due to all the prefabrication. There are doublers to add, then the stab is glued onto the fuselage. By turning the fuselage up-side-down on a flat surface, both the stab and the fuselage are at right angles to each other. Only one additional bulkhead is glued in place. The turtle deck is slotted to take the fin, then it is epoxied in place. One word of caution; I used tape to hold down the turtle deck, and when it came time to pull it off, it took some of the paper also. If you use drafting tape, you probably won't encounter this problem since it has less adhesive. The fin and the upper nose cowl are glued in place, making sure that the fin is perpendicular to the stab. I added the Nyrods and sheeted the bottom of the fuselage.

The cockpit was sanded and painted, then the canopy was glued in place. All that remained was to sand the entire fuselage and tail assembly. The model was now ready for finishing. I chose to put on a couple of coats of clear nitrate dope, followed by Japanese tissue. I used the tissue rather than silkspan because it is much smoother and takes less filling. An additional coat of dope was applied to the tissue and then left to dry. When the dope had dried thoroughly, I sprayed on an even coat of K&B Epoxy Primer, and wet-sanded it when it was completely dry. Another coat of primer was applied and handled in the same manner as before. This K&B primer is an exceptional product. It really does an outstanding job of filling and leaving a smooth surface.

After final sanding of the primer, I sprayed the entire fuselage and tail with white nitrate dope. I trimmed the white with a blue metallic color for some color contrast. When trim painting the vinyl on the wings the following procedure is recommended, otherwise the paint will not adhere: Once you have marked off the wing to your desired trim pattern, lightly sand the vinyl that's to be painted with some very fine sand-

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paper. Wipe clean, tack, and spray with clear dope to seal the edges. Remember, the paint will peel off without this step. The model was given several coats of clear butyrate for fuel proofing. The actual painting of the model took longer to do than the building of it. Those of you who are Monokote fans could have this fine kit flying in about a week!

The engine used in the "Lucky Fly" is an O.S. 40 using a Dubro muffler. I like this muffler because it doesn't use up a great deal of space. It seems to work quite well with the number of baffles recommended for a .40 size engine. The O.S. was mounted first on a heavy piece of micarta platform, then this was attached to the motor mounts. R/C equipment used is the five channel Kraft Sport Series, and the installation of the gear was a breeze, taking about an evening of work. The model was now ready for the big test hop!

Several weekends, in our usually sunny California, were drenched with rain, making flying an impossibility. Finally, a weekend without rain! I asked a friend of mine, Tom Harper, if he would do the honors of giving the "Lucky Fly" the first test hop. Tom agreed, so we went to one of our local flying sites. The Kraft radio was given the ground range check, and everything was working just fine. By the way, what can you

say about a Kraft radio that has not been said before? Kraft for years has meant quality, reliability and service. When you install a Kraft radio in your model, equipment failure is the least of your problems.


I fired up the O.S. and made a couple of throttle adjustments. Tom poured on the power and the "Lucky Fly" tracked straight down the runway. The takeoff was smooth and uneventful. After performing a few maneuvers, Tom landed the model to make a couple of trim adjustments. This time I took the controls to give it a whirl. Prior to this, I had never flown a two-stick arrangement, but the changeover was simple to make indeed. I was able to takeoff and do a few maneuvers of my own with little effort on my part. The model performed beautifully. It is extremely stable, with no bad characteristics. Also, slow flight is easily done without fear of stalling out of the sky. I made my first landing on a rather rough part of the field, but the "Lucky Fly" didn't know the difference; the landing gear smoothed it out without a bounce.

I have since flown the model about a dozen times and enjoy it more and more with each flight. I would highly highly recommend building and flying this well designed, high quality kit. ●

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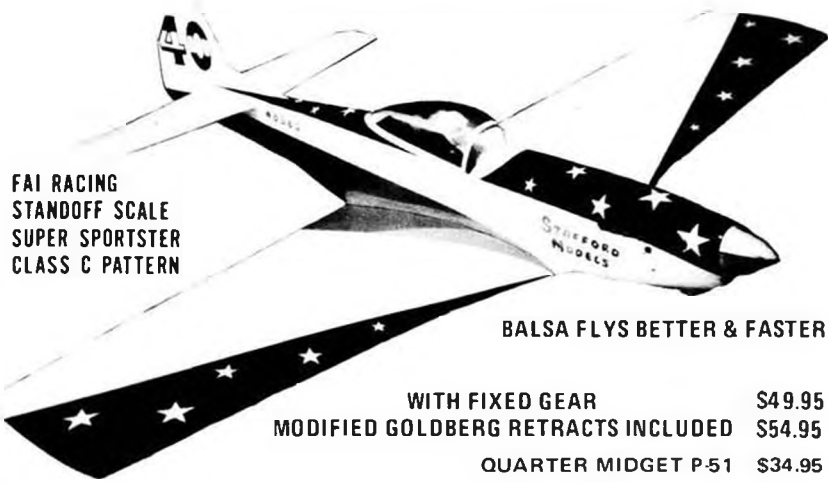
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Tea Kettle . . . Continued from page 29 wood screws, but don't touch that drill or epoxy the motor to the firewall! This causes nothing but trouble. Instead, keep your eyes open for broken old \$6 watches and the smaller alarm clocks. I obtained the three necessary screws and one to spare from the old watch I had. Watch repair shops, incidentally, don't carry spare screws.

**CONSTRUCTION**

Although it may not look that way, construction is very simple and conventional. But to save time and prevent confusion, proper sequencing is necessary.

The center pod is first, and is built upside-down over the top view of the center pod. Start by cutting out the keel, F1, F2, F3, and the plywood firewall. Continue by constructing the crutch over the plan with 1/16 inch sq. balsa. (Caution; never actually push the pins through this light balsa, but

instead use pins on either side to hold balsa in position). Now add the bottom portions of F2 and F3, making sure they are perpendicular to the board and crutch. When this assembly is thoroughly dry, add the keel, bottom portion of F1 and the 1/16 inch sq. uprights which must fit flush with the top of the keel. Once this point has been reached, leave the center pod alone to dry and go cut out the wing ribs.

Before starting the cap stripping procedure, locate some bobby pins or bend some .025 piano wire to use as spring clamps. Start the procedure at the fore end, using a reasonable amount of glue and work towards the aft end. When dry, remove the pod assembly from the building board and add the 1/16 inch sq. side stringer laminates. Start by putting the first layer so that the ends fit flush with F1 and F3 and follows the contour as shown, then add the second layer to the first and sand so

that the stringer starts as a 1/8 x 1/16 inch strip near the cockpit and tapers to 1/16 inch sq. at either end. Glue on the two side portions of the nose block and carve to shape. Do not add the cap block yet. Add the remaining formers and cover from F1 to F2 with typing paper. Before gluing on the firewall, mark the engine position and make the holes using a straight pin. Tap the holes with the screws intended for use and then glue the firewall on as shown.

The wing is built in three sections and is started with the center section. Begin by laying out the framework and cementing together. When dry, remove from the board and add the 1/32 inch sheeting by trimming the wood so that it fits snugly between the ribs. Then glue in place making sure it fits flush with the top and bottom of the ribs. Finally, cut the holes for the tank and check for a snug fit.

Next comes the two main panels, which are built in the usual manner. However, instead of pinning down the LE and TE, pin down the main spar and TE. Glue in all the ribs, making sure ribs R1 and R2 have the necessary angle for dihedral. Add the top spars, and then the leading edges. The wing tips are glued on next. They should go on a line directly from the LE to the TE which means a slight angle relative to the bottom of R6. Prop the tip of the wing tip up about 3/16 inch from the board. Remove the wings from the board when dry and add the tip spars. Finally, glue the wings to the center section.

Cut two booms from the hardest stock of the dimensions shown and taper to the appropriate specifications. Check for a good clean fit and then glue on the rudders. When dry, cement the booms in position, gluing well on all areas of contact. Add flush panels and set assembly aside.

As for the stabilizer, keep it as light as you possibly can.

There are now three main sub-assemblies. They are the center pod, the wing with booms, and stabilizer. Any light covering material is possible but colored tissue paper seems best. The original was covered with orange tissue and 4 coats of 50-50 dope-thinner mix with a touch of sanding sealer.

Finish assembling the Tea Kettle and double check all alignments. Add paper turtle deck, trim tab, and install the engine. But before adding cap block, check balance and test glide model. If model shows a further need for nose weight, correct the condition by adding lead ballast to the hole in the nose. Now

add cap block, sand and paint if desired, but don't paint portions aft of the CG. Finally, make sure the prop is perpendicular to the wing when the compression stroke starts.

#### FLYING

On the first time out, the original Tea Kettle gave results which were most gratifying indeed. After two initial adjustment flights the cartridge in the gun was empty so a new one was put in. On the next flight, the model climbed to about 150 to 200 feet at an angle of about 15 degrees, and was in the air well over a minute and a half. Subsequent flights showed one minute plus performances to be the rule rather than the exception, with two minutes possible on a fresh cartridge.

It has been my experience that climatic conditions of the day tend to greatly affect the engine run times on this small engine. For example, the above flights were obtained on a warm (85 degree F+) June day, calm, and the air of a lower pressure than on a chilly day in December or January (60 degree F to 65 degree F) calm, and the air heavier. The second condition tends to decidedly lower engine run times and the flight time also (30-75 sec.). Note that these are averages and will vary from cartridge to cartridge.

When fueling and launching the model the following procedure seems best: First, before fueling, make sure piston is not in compression. When model has been fueled, lay gun down in a shaded area or put it in an enclosed box to keep it cool. Hold model by the wing, fingers on the LE and thumb on TE and flip prop sharply. When engine has started, make sure it is running in the proper direction. Grasp by the center pod near the cockpit area and gently launch with a slight left bank. The model should start climbing in a left handed circle about 25 feet in diameter.

So there you have it. A sporty, simple aeroplane which I hope will perform as well for you as it has for me. ●

**F/FAI . . . . .** *Continued from page 37* mention the most important! Two new sets of glasses; one for work, and one for flying!

Got some sleeves and pistons chromed by Mr. R.L. Anderson from Ohio, and will try them in 3 different brands of engines; Rossi, TWA, and the new K&B 15. As you know, chroming does not increase the R.P.M.'s, but makes the engines last longer.

With the current non-availability of Rossi engines and parts, one has to try *something* to keep them running.

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By the way, in coming issues, we will give the promised tips for reworking the new K&B 15, although this will be limited to those who have the necessary tools to do the work.

Speaking of engines, we have heard so many claims of Rossi's turning 25,000 plus R.P.M.'s, but thus far have not seen one . . . not in Caddo Mills, not in California. We wonder if this is the case of prop rework or tach rework!

We're very pleased with our Rossi's, and as far as we know, we're one of the few using a 7 x 4 prop. We don't claim over 23,200 using standard K&B 75-25 fuel . . . Very interesting! ●

#### R/C Soaring . . *Continued from page 22*

Landings at most slopes open up a whole new set of problems, not the least of which is just how to get the sailplane out of the air. Safely. A strange problem to Flatlanders, but on the slope and in a good breeze, the landing can be as frustrating to a pilot as it might be amusing to spectators; or to other pilots whose models are in one piece and anchored securely on the ground.

When time comes to terminate a flight, a routine landing pattern is initiated. The exact track will vary with the location, but usually a landing is

approached by flying with the wind toward the hill until the sailplane just passes over the edge of the cliff. Then, and ideally, a 180 degree turn is performed immediately so as to not fly too far behind the ridge. By the time the sailplane has turned back into the wind, it should be fairly close to the ground. Ideally. The trick is to keep the wings fairly level and the air speed reasonably constant as the model rocks and bounces in the turbulence near the ground and settles in. Ideally. Many times, however, ground effect will be strong and the sailplane will keep flying, just skimming the surface, until it crosses over the edge of the cliff. At this point, it gets back into lift again and starts climbing. The whole process is repeated . . . over and over until solid contact is made with the ground. Gently. Ideally.

It takes skill and much experimentation to judge just how far the 180 degree turn for landing can carry the sailplane downwind before getting into the "curl" and big trouble. The obvious thing is to work it easily, reducing altitude progressively on each downwind pass. The idea is to not get back into the rough stuff. Another technique is to track a long crosswind path parallel to the edge of the cliff, but just inside the

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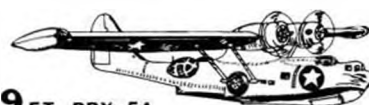
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ridge and out of strong lift. Of course, this can create problems at "touch-down" due to the crabbed attitude of the model unless a quick, last-minute control action can be made to provide a straight-ahead ground contact.

The 180 degree turn approach is probably the best and safest. It puts the model in a normal, nose-first track over the ground, and it provides for the slowest ground speed for landing. But, as with most things, this too is a compromise because it could offer problems.

The basic problem with the 180 degree downwind turn is a common one: you can't see air speed. Ground speed, yes, but not air speed. Flying a sailplane out away from the cliff is usually a relatively slow process. That's because ground speed is flying speed minus wind velocity. But turn the thing around, flying in toward the cliff, and it moves right along . . . ground speed is then air speed plus wind velocity.

Say you're flying a melmac Cirrus. Normal air speed is a bit less than 20 mph . . . but call it 20 for now to make it easy. In a 15 mph wind, it'll move away from the cliff at a staggering 5 mph . . . unless nosed down for extra drive. Now head for home. Once it gets turned, add the 20 and 15 and your little jewel's whistling back at around 35 mph. Much faster than you're used to watching. But what you're seeing is ground speed. In either case, the wings of that Cirrus are moving through the air at 20 mph.

So now, 'tis time to land. The pilot turns his sailplane back toward the cliff, flying with the wind, and plans a 180

degree turn approach to a perfect touch-down. Ground speed is about 35 mph . . . and his Cirrus is getting big faster than he's accustomed to seeing. Either or both of two things are likely to result. The model is quite likely to get carried too far behind the hill before the pilot realizes his problem . . . or, the dawn lights and the pilot reacts by pulling the nose up and tightening the turn in an attempt to stop this over-the-hill run. And he runs out of air speed while the sailplane is still clipping along over the ground at about 30 mph . . . 15 mph wind velocity and, say, 15 mph stall speed in a steep turn. So, the sailplane stalls . . . maybe even spins . . . and the rest of the week is spent in the shop.

Remember, the pilot was watching ground speed. The sailplane could care less. It understands physics of flight, not optics. It's only interested in the air passing over its wings. Of course, all of this is not peculiar to slope soaring . . . just that it's the subject at hand. But if you dump one now and again on a 180 degree downwind turn, don't feel too badly. The FAA records are filled with accident reports of pilots . . . sailplane and power . . . who watched ground speed while on landing approach and ignored the air speed required for flight. The only way you can see air speed is to read it on a dial on an instrument panel . . . or some such device. Model sailplane pilots just gotta be conservative.

To a truly proficient R/C sailplane sportsman, this landing thing is all just so much child's play. Like Old Flying Buddy (OFB) Paul Forrette, LSF/006,

who flies a shallow cut pattern back over the ridge . . . well up-wind of trouble . . . and rather high. When almost overhead, OFB works the sailplane's pitch angle, and thus air speed, to bring it down almost vertically . . . to his feet. He's also been known to enjoy flying in and out of fog banks which were hanging just out from a Pacific coast bluff. But then, he knows what he's doing. We followed him into one once . . . didn't see our sailplane for three days. A Park Ranger found it behind the ridge near a camp site.

A less exacting concept to the landing problem than that of OFB is to literally dump it in. This can only be recommended where the terrain is so covered with tall, soft vegetation as to provide a suitable cushion for this Silent Kamikaze. And then there was one fabulous flying site which was nearly covered with big, willowy bushes . . . which completely camouflaged concrete picnic tables and benches. Surprise!

With the less than ideal landing accommodations offered by most slope soaring sites, and with the generally turbulent air close to the ground, touch-downs . . . or perhaps more accurately, crunchdowns . . . can take a toll. Though any sailplane can be used quite satisfactorily under appropriate conditions, a ship designed primarily for the slope should be structured to take advantage of, as well as survive, the rather unique flight/landing environment . . . Like rugged. Plywood bulkheads, heavy doublers, lotsa balsa blocks, hardwood and fiberglass. Functional ballast. Foam core/balsa sheeted wings are worthwhile, too.

The plus factors for this type of construction are twofold: The strength and toughness provides added longevity, and the additional weight gives higher flying speed with resulting penetration capability. The fuselage nose structure, as well as leading edges of flying surfaces, should follow the Baldwin Locomotive School of Engineering design



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concept and be rigid and impact resistant. Knock-off wings are essential, and two-piece, plug-in panels seem to hold up better than other configurations. But whatever the design approach, ruggedness is vital for a servicable vehicle . . . and a good time on most hills.

Unfortunately, slopes for soaring just plain ain't available everyplace. Out in the big flats country . . . where you can see for two days . . . all the wishing and wanting in the world just isn't going to grow a hill. But there can be alternatives.

Take Texas for example. It's a reasonable statement that most of that real estate is absolutely useless unless you're interested in oil, cattle, wheat or beautiful women. But for the really worthwhile things in life, like messing with R/C sailplanes on slopes, it's sorta hopeless. Right? Wrong.

What wishing and wanting won't accomplish, the taxpayer's money sometimes will. In Big T, the U.S. of A type government decided that water storage and control . . . conservation and problems had been long wanting. So, with millions of model sailplane enthusiasts' dollars, they build great big, man-made lakes and reservoirs. Said bodies of water do wonderful things for the ecology/conservation bit . . . also a boon to local recreation activities. But most important of all . . . these mini-oceans require huge earth-fill dams to keep the water from all running South.

Next, along comes Lonesome Jimmy Lee Jones, LSF/229, who's got a hankering for sloping. One thing leads to another. Pretty soon, Lonesome Jimmy and his Dallas/Ft. Worth sidekicks discover that big, slanted dirt piles are perfect for the soaring sport. In fact,

the crowd has spotted four such locations . . . each oriented to a different point of the compass. No matter which way the wind blows, they've got a slope available.

Might mention that the "Lonesome" handle . . . gosh, I love that kinda talk . . . isn't for real. Just made it up cause it sounded kinda zingy.

It goes without saying . . . well, almost . . . that the experience of the Texas group is imaginative. But their adaptability and enthusiasm might lend encouragement to other would-be slope soarers who happen not to live in mountaneous or coastal regions.

To participate in this sport, a suitable site must be found. Brilliant. However, it needn't be the headlands of the Rhine Valley . . . nor the White Cliffs of Dover or Diamond Head. Almost any ground rise is a candidate . . . if it offers a wide face reasonably steep and turned to the prevailing wind. Look around. Maybe there's a dam sight . . . or major roadwork, rail or auto, that utilizes cut and fill. Even ramps for overpasses should be investigated. Any rise over 50 feet could work. Maybe. Lightweight models have been slope soared on the inclines along one side of a football field . . . like where they build the bleachers. A long roof line might work. Anybody ever check out those huge grain elevators out in Grain-belt, USA?

The location of a flying site can be approached by a couple of buddies, or as a club-organized safari. A man-carrying airplane is an ideal search tool, and it might provide a new prospective to familiar territory. Topographic maps, available from the U.S. Geodetic Survey Office, Department of Interior, can also

be helpful.

Assuming some kind of site can be found, the landing area may still be a problem. If a properly oriented landing area with adequate approach clearances is not available at an otherwise promising slope, downwind or crosswind landings should be considered. But keep in mind that, sooner or later, landings will also be made at the bottom or one the face of the incline . . . like when lift drops suddenly and you can't get back to the ridge. A valley, beach or the like . . . uncluttered with trees and fences and boulders . . . is highly desirable.

Check around. An hour's drive isn't too much to consider . . . more might be worth it, even. Remember Lonesome Jimmy and his dam slope soarers. And remember that finding a site could be like so much new world to your sport. Slope soaring can offer more year 'round enjoyment than any other form of modeling . . . simply because in many places the wind blows more often than not.

You'll always remember your first flight off a cliff. For some reason it takes a ridiculous amount of courage to step up to the edge of a mountain and throw your model out into space. It's so high.


Take a big gulp and throw hard . . . slightly nose down and directly into the blast. You don't need a stall . . . or a loop back over your head. Makes for difficult recovery. Keep driving it straight out from the cliff and let it climb. Then an easy turn to run parallel to the face . . . make a 180 away from the cliff and start a Figure-8.

Get it out there . . . and up there. Way out there and way up there. Cause

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that's where the fun is. Where else but "way out" and "way up." Like wow, man! ●

**Woodwind . . . Continued from page 19** adjustable towhook), and allow to dry overnight on a *perfectly flat* workbench, with weights to prevent warping as glue sets. Then add 1/8 x 3/16 inch piece of balsa at rear, and install completed vertical tail/rudder assembly. Add another 1/8 x 3/16 inch strip of balsa over fin and glue the remaining piece of 1/8 x 1-1/2 x 36 inch sheet on top of the entire fuselage assembly, again leaving to dry (under pressure) overnight.

After trimming excess balsa and fairing pine nose block, clamp two pieces of 1/32 inch plywood on both sides of the fuselage in vicinity of the wing, drill holes for dethermalizer eyelet, auto-rudder pin, etc., and round all corners . . . especially at the back end. Give two coats of dope, sand lightly, cover with Japanese tissue, and give a few more coats of dope. Install tow hook with wood screws (pre-drilling 1/16 inch holes will prevent spruce from splitting), but do NOT add ballast until wing and stab are finished. Set the fuselage aside and proceed to construction of the

wing.

Wing: First, make two *identical* rib templates from 3/32 inch plywood. Cut all ribs for both left and right wing panels slightly *oversize*, drill 1/8 inch holes, and insert two pieces of straight 1/8 inch steel wire (round ends) through the ribs. Then sand entire stack to final shape using a large sanding block, with the plywood templates as guides on the ends of the "rib sandwich." This is very important, since perfect uniformity of the ribs will provide a good bond with the balsa sheet covering, and will guarantee balanced aerodynamic loads for a straight tow and consistent glide.

Remove the appropriate inboard ribs (see plan) from the stack, enlarge 1/8 inch holes to 5/32 inch, and cut notches with a razor saw by spot gluing a piece of *slightly undersize* spar stock in place. Now, you're ready to start construction of the wing!

Using your flat workbench, build both inboard panels at the same time. After attaching balsa "leading-edge spar" to the bottom sheet, glue ribs in place. Let balsa sheet extend about a 1/4 inch beyond ribs at the trailing edge. Insert 1/8 inch I.D. nickel-plated steel tubes through 1/32 inch plywood reinforce-

ments and glue to ribs. The pre-drilled guide holes should automatically insure *exact* alignment of both wing halves. Next, install spruce spars, making sure that they are perfectly flush with rib contours. Likewise, sand leading-edge spar and trailing-edge sheet overlap to airfoil section. Finally, attach the upper sheet surfaces to the completed "sub-assemblies," using several pieces of 1/2 x 1/2 x 36 steel bar stock to hold in place. Titebond glue is recommended, since acetone based cements (such as Ambroid, Testor's, Pactra, etc.) dry too quickly, while water-based adhesives (such as Elmer's) dry too slowly.

After allowing at least 24 hours to set, remove excess sheet balsa, glue the spruce leading edge in place, and sand to the bevel shape shown on the plans, which simulates the "self-turbulating" effect of a sharp leading edge (see author's paper in 1972 NFFS Symposium report) but is less prone to damage.

The outboard panels are built in a similar manner, except there are no spars . . . use *light* wood. Block up the trailing edge tips 1/4 inch and fasten the top sheeting in three strips to allow for a slight amount of distortion due to the negative twist (washout). At this point, make sure that both inboard panels and both tips have identical planform shape (i.e. area) by trimming the trailing edges and dihedral ribs to match.

Now, sand all surfaces lightly, give one coat of 50-50 dope, sand again and cover with Japanese tissue (paper grain crosswise to wood grain for extra strength). An easy method of applying tissue which gives good results is to fasten all around the edges with thinner, and then water shrink before doping.

Give at least 4 to 6 coats of 50-50 dope to keep structure from absorbing moisture on damp days. The major portion of the bending load on a sheet-covered wing is carried by the skin. Unfortunately, balsa wood has an affinity for water, which seriously degrades its compressive strength . . . voila, buckled wings! Take my advice . . . I learned the hard way!

Painting the wing tips white will greatly improve the model's all-around visibility, whether in the air, on the ground, up a tree, etc. Finally, add tip dihedral by sanding to the proper angle (a la hand launched glider). Glue both tips at the same time with the trailing edges of the left and right wing panels back to back to be certain that both dihedral angles are identical. When finished, each wing panel should weigh slightly over three ounces, and will be



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virtually rigid and puncture proof, besides having smooth uniform surfaces with streamlined, undisturbed airflow. Construction of the conventional built-up, tissue-covered stab should be fairly easy. Naturally, it should be built as light and strong as possible!

Now, go back to the fuselage, and use one of the plywood rib templates (set at 3/8 inch incidence) as a guide to drill holes for the 1/8 inch steel wires. A drill press is a MUST for proper alignment. Bend wires as shown on the plans, countersink holes about 3/16 inch deep, and epoxy in place.

Finally, assemble the completed components (wing/body/stab) and add ballast (about 2.5 ounces should be adequate) until model balances at 50 percent of the wing chord. Install a small eyelet at this location on top of the fuselage, and suspend the entire airplane from a string to check *both* longitudinal and lateral balance. Model should hang perfectly LEVEL about its center of gravity. If it does not, add small wood screws to wing tips and lead pellets to nose, as needed. Believe it or not, most of the "trimming" for a Nordic A-2 glider actually takes place on the workbench and in the workshop!

**FLYING**

Fix rudder in neutral position with a piece of 1/32 inch wire, add about 1/8 inch incidence to stab trailing edge, and hand glide over tall grass. Adjust glide by changing tail incidence until model is just on the verge of a stall. Do NOT add weight to nose or tail of model. If the plane dives, raise stab trailing edge in small increments (one turn of adjusting screw), and vice-versa.

Now for that crucial first flight! Set rudder in neutral position with A/R pin, and allow about 1/8 inch rudder deflection as a safe starting adjustment for the glide. For average weather conditions (5-10 mph. breeze) locate the tow hook about one inch in front of the

atalog, 20¢



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C.G. (move 1/4 inch forward in high winds, and 1/4 inch aft for a light breeze). Model should tow up *perfectly straight*. If it does not, carefully check all surfaces for misalignment, warps, balance, etc. and correct *immediately*.

When you are satisfied with the towing behavior of the model, adjust glide as follows: If plane stalls, decrease stab trailing-edge incidence (and vice-versa) until a smooth, floating glide is obtained. Next, vary the turning radius with gradual rudder adjustment. If tighter turns are desired, additional stab trailing-edge incidence will be necessary to prevent diving. On the other hand, if wider turns are wanted, less incidence will be required to avoid stalling. Now, with the help of a *little "lift,"* every flight should be a MAX! ●

**Workbench . . . Continued from page 5** don't go for the word "permit." Until the government decrees that the air above us belongs to it, lock, stock, and dust partial, it appears that we should be on terms of mutual coexistence. YOUR LAND COULD BE OUR LAND . . . ing strip.


AMA is working up a detailed report on a tax write-off situation that could be very instrumental in acquiring flying sites for model clubs. It is based on the idea that a property owner could donate land for the use of a non-profit organization (a model club, that is) and deduct from his tax liability an amount equal to the land's market rental value.

We wonder if a farmer could do this PLUS putting the same piece of land in Soil Bank (in which the government pays him for *not* growing crops on it)!


**J.L.S. THREATENS SCALE EVENT**

Apparently our AMA President, Johnny Clemens, has been so busy that it wasn't until reading Dave Linstrum's VTO column in MAN that he found out about Jonathon Livingston Seagull. In


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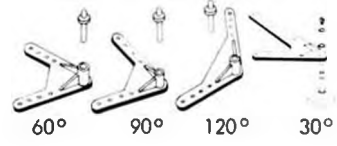
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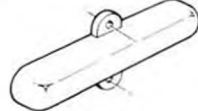
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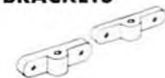
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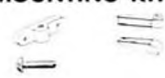
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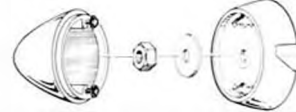
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fact, he became so taken with this prominent bird that he made Jonathon an honorary member of AMA.

Actually, this could turn out to be a big mistake. As a member of the organization, J.L.S. could enter competition . . . and what more logical event than Scale? Certainly the Builder Of The Model rule would be no problem! It would also be pretty difficult for a static scale judge to claim that there were any deviations from scale outline!

About the only way this feather merchant could be disqualified is on motive power. With rubber, gas, CO<sub>2</sub> and electric to choose from, he might be out on a limb finding a category.

However, all we can say is, if he announces that the next maneuver will be a Bomb Drop, you better run for cover! THINGS TO DO

Dr. Dennis M. Hall, a member of the 1973 R/C Soaring Nationals contest board, reports that this year's event will take place on July 22, 23, and 24, at the same Miller Meadow site in Chicago as the past two years. "Mr. Nyrod," Dan Pruss, will again be the C.D.

We assume that further information may be obtained from Dr. Hall at 415 Glenshire Rd., Glenview, Ill. 60025, or from Dan Pruss, Plainfield, Ill. 60544.

\* \* \*

The D.C. R/C Club will hold it's

National Capital R/C Pattern Tournament on June 23 and 24, 1973, at Bolling Air Force Base, Washington D.C.

Main feature of this contest will be the experiment in new management techniques and pattern concepts to be employed. To quote the brochure (contact C.D. Tom Carey, 17900 Cliffbourne Lane, Derwood, Maryland 20855 . . . phone (301) 926-8764 for a copy, or more info.):

"Beginners and experts will enjoy it. Enough classes to allow each contestant to compete with persons of like skills. A revolutionary contest format, created in cooperation with the Academy of Model Aeronautics to explore ideas leading to improved management of AMA sanctioned RC pattern contests."

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Class winners will be determined by totaling the best of three contest rounds plus score of qualifying round. All maneuvers will be selected from AMA and FAI patterns.

Sounds like some good ideas. We'll let you know how it works out.

\* \* \*

The San Fernando Valley Silent Flyers . . . contact address Suite 410, 11665 West Olympic Boulevard, Los Angeles, Calif. 90064 . . . is in the process of instigating the First International R/C Sailplane Postal Contest. This ambitious effort is focused on a period between September 8 and 23, during which time, entrants from any corner of the world may hold the specified events and then send in the results for comparison with all other registered contestants.

There are to be events for both slope and thermal sites, including speed, duration, and precision. All events entered by a particular contestant must be flown with the same model, at the same flying weight. Two classes of planes may be entered; one for gliders less than two meters in span with not more than two servos, and one for larger gliders (withing FAI limits) with any number of servos.

No entry fee is required to enter this contest, but U.S. residents are asked to send a stamped, addressed envelope with their entries.

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### EAST COAST SOARING SOCIETY

For additional information, a free copy of the ECSS Journal, 'SAIL-PLANE', and an application blank, forward your request to: Clive Sadler, ECSS Sec., 46 Oakcrest Drive, Dover, DE 19901.

### BULLETIN BOARD

We're pleased to receive notice from the Model Aeronautics Association of Canada (M.A.A.C.), the Canadian counterpart of the U.S.' AMA, that Warren Hitchcox has been elected President of the organization for 1973. We have known Warren for many years, starting with the Buffalo Bisons winter trade show gettogethers of some years back. We have judged him twice in World Championship R/C Pattern competition (Bremen, Germany and Doylestown, Pa., USA) when he was a team member representing Canada, and have even employed him as a pattern judge for our AMA Nationals.

The M.A.A.C. Board of Directors has approved the hiring of Mrs. Lynda Day, wife of Public Relations Chairman Colin Day, as a full time secretary. This will be the first time M.A.A.C. has had a paid employee.

Anyone wishing to contact M.A.A.C. can now write to Box 9, Oakville, Ontario, Canada. Personally, having met Lynda Day at Toledo this year, we'd prefer to call M.A.A.C. headquarters at 416-844-8764 and talk to her.

Jim Kirkland, like any one of us who is a totally involved modeler, had collected a huge inventory of modeling supplies, equipment, tools and related odds and ends after many years in the hobby. Jim passed on all too soon and without

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warning last November, and so, with the help of some of his modeling friends, his wife, Mig Kirkland, has compiled a 10-page catalog of over 250 items to be sold on a first-come basis.

The booklet, entitled "From Jim Kirkland's Workshop," which lists many still-in-the-box engines, a DuBro helicopter (assembled), hundreds of accessories, R/C test equipment, shop tools, spray guns, balsa wood, props, wheels, spinners, tanks, etc. may be obtained by sending 25 cents (to cover printing and postage) to Mig Kirkland, 344 Edge Ave., Valparaiso, Florida 32580.

In recent months, we have been enjoying a magazine exchange with the publishers of Australian AIRBORNE Models, a bi-monthly magazine quite obviously originating in Australia. Not being gifted bilingually, it is a particular pleasure to receive magazines, written in English, from other parts of the globe and thus be able to keep up to date on modeling in other countries.

Airborne is the official MAAA and Model Boat Club of NSW (New South Wales) Journal, and as such, is a well rounded magazine covering all phases of the modeling hobby, as is done in MB.

It seemed a shame to keep all of this to ourselves, so we have arranged to carry the exchange a little farther.

As announced elsewhere in this issue, we have become the sole distributor of AIRBORNE in the U.S.A., and are entertaining requests for individual subscriptions as well as orders for bulk quantities from hobby dealers already carrying The MODEL BUILDER.

Subscription rate is \$5.00 per year

(6 issues), while individual copies sell for 90 cents at your dealer. Sale price is higher in U.S. than printed cover cost due to dollar exchange rate plus shipping. Subscription orders should be sent to The MODEL BUILDER (Attn: AIRBORNE) 1900 E. Edinger Ave., Santa Ana, CA 92705. Next issue available will be May 1973. In order to avoid late delivery, AIRBORNE will be shipped by Air Freight from Australia for distribution by mail in the U.S. ●

### Index to Advertisers

Ace Radio Control, Inc. ....	53
Airborne Associates .....	50
Associated Electrics .....	50
Astro Flight, Inc. ....	54
Bridi Hobby Enterprises .....	55
Johnnie Casburn Mfg. Co. ....	58
FH Wheels .....	61
Fiberite Co. ....	63
Carl Goldberg Models, Inc. ....	2nd Cover
W.C. Hannan .....	52
Heath Company .....	3rd Cover
House of Balsa .....	63
K & B Mfg. ....	48
Kirn-Kraft .....	52
Kraft Systems, Inc. ....	1
Mark's Models .....	56
Marlow Engineering .....	61
Model Rectifier Corp. (MRC) ..	4th Cover
Walt Mooney (Peanuts) .....	60
Sid Morgan (Vintage Plans) .....	58
Northfield Precision Instrument Corp. .	46
Orbit Electronics .....	47
Peck Polymers .....	62
Pro-Line Electronics, Inc. ....	57
RS Systems .....	51
Sig Mfg. Co. ....	1
Jack Stafford Models .....	56
Sterling Models, Inc. ....	44, 45
Su-Pr-Line Products .....	53
Tatone Products .....	62
Tenco International .....	49
Vortex Model Engineering .....	43
Williams Brothers .....	61
Windspiel Models .....	59
Earl Wolsleger .....	60

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RC-101





## Not All 5 Channel Systems Are The Same MRC proves it with The New Mark V

• If you've ever been on a flying field or read an R/C magazine, then you know that MRC digitals set industry standards for value and reliability. Over the years we've done it by staying ahead of present technology and initiating an excellent quality control system.. For the 1973 flying season MRC has done it again... with the introduction of the MARK V... five channel system. This second generation system retains the best of MRC's reliability features and adds to it a new generation of component technology and design. Our first generation systems were good enough to lead...so think what these improvements will do for our reputation and your flying

- Seven low drain integrated circuits for maximum reliability
- Miniature, higher torque, improved resolution, 3 wire servos
- Low current drain (9 ma idle) servos with integrated circuit amplifier for more flying time

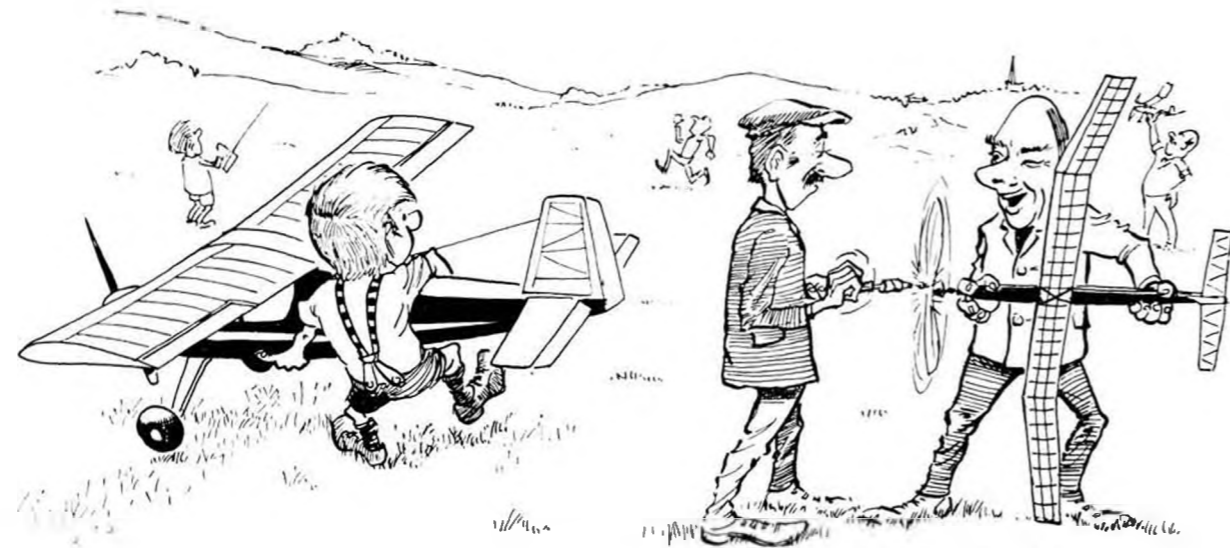
- Receiver with double tuned front end for higher selectivity as well as AGC and noise rejection circuitry. All silicone semi-conductors.
- Lightweight, military specification, gold plated connector contacts
- Ball bearing pivoted sticks
- Isolated dual transformer in charging system
- Nickel cadmium batteries in both transmitter and receiver
- Self-contained collapsible antenna.

In essence the Mark V is a totally new, competitively priced 5 channels system, with more range, more power and more reliability. This is technology and performance you can be supremely confident about... because its a product of MRC radio control leadership... Available for all 27 or 72Mhz frequencies. Complete with 5 channel; 4 rotary servos; nickel cadium batteries for receiver and transmitter; battery charger.



MODEL RECTIFIER CORPORATION • 2500 WOODBRIDGE AVENUE • EDISON, N.J. 08817





"They start off on radio and work up to free-flight." In light of comments to the contrary printed in another publication, this cartoon from Topical Twists in the February 1973 issue of AEROMODELLER seems particularly appropriate.

PHOTOS BY PAUL ORTMAN

## FREE FLIGHT By RON EVANS

East moves West as Ron Evans, our Eastern F/F editor, takes over for Tom Hutchinson this month. Ron asks, "Will the Sleek Streak take over Unlimited Rubber?" Tune in next month . . . . .

### AROUND THE WORLD WITH NEWSLETTERS

The next best thing after flying FF is hearing about it. Since the U.S. is pretty well cut off from inexpensive travel to and from the rest of the world, about the only way you can find out what's happening in England, Denmark, Germany, or anywhere else is to either correspond with one of the FF'ers there, or obtain one of those countries' excellent newsletters. Here are some of the addresses:

ENGLAND - Free Flight News, Ian Kaynes, 11 Parkside Rd., Sunningdale, ASCOT, Berks, England, SLS, ONL. \$4.00 per year, and well worth it. This is probably the best FF newsletter available.

DENMARK - FRITFLYVNIG, Christian Schwartzbach, Akrogen 20, 2600 Glostrup, Denmark, Terrific drawings and illustrations, but the text is in Danish. I don't have a subscription rate for this 'letter, but a postcard to Christian should do it.

SWEDEN - ModellFlygnytt, Lars-G Olofsson, Grevgardsvagen 56 2tr, 421 61 V. Frolunda, Sweden. Another good newsletter, particularly for the FAI flyer.

NEW ZEALAND - South Island News (SIN!!) Paul Lagan, 28 Dorset Grove,

Porirua, PM PRO 5095, Wellington, New Zealand. \$1.50 U.S., but I assume that is for surface mail; if you desire faster delivery, write for airmail rate. Paul's newsletter is loaded with vivid contest reports, good 3-views, and data on

model trends, particularly FAI events. CANADA - Toronto FAI Group, Andy DeMello, 609 Soudan Ave., Toronto 7, Ont. Canada. Good contest reports from Andy and Peter Allnutt, with neatly drawn 3-views.



Al Hotard (cap) and Randy Secor handle the tricky business of putting together a Wakefield after winding the motor outside to prevent the motor from taking it apart first.

The MODEL BUILDER



FOTOS BY FUDO

## MONOCOUCPE 110 SPECIAL

Design by WALT MOONEY, built by BILL PARDOE.

In the continued search for lots of area in only 13 inches of span, our Chief Peanut designer found this clip-winged version of one of aviation's prettiest aircraft. It's hard to keep a good secret!

● When selecting a model for Peanut Scale, it is generally a good idea to pick one that has a low aspect ratio wing so that it has as much area as possible within the thirteen inch maximum wing span allowance. A high wing model also is a good choice for a flying scale. The Monocoupe 110 Special fits these standards quite well so I selected it for a design. Bill Pardoe came over when I was just finishing the working drawings. He thought it looked like a good model and so I gave him a set of plans.

The model in the photos is the result of Bill's efforts with my plans, and he says that it flies really well, in fact it flew right off the board. I'm going to have to work faster or refuse plans to

people like Bill if I'm going to have the pleasure of having my new designs first at the model field.

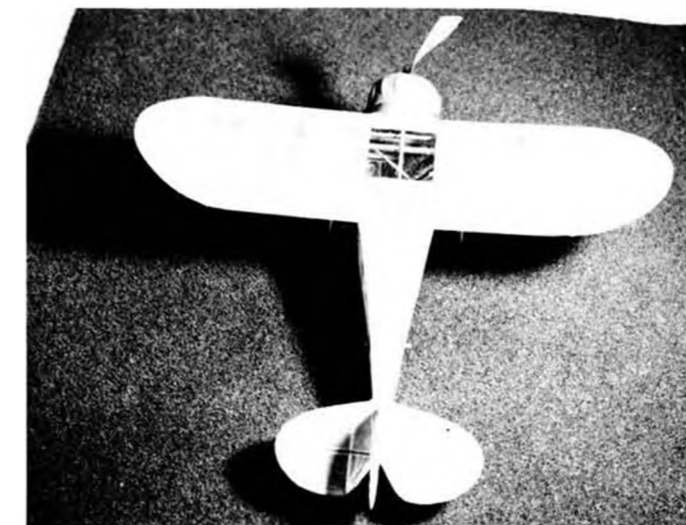
The model is basically of the same old structural technique, so there won't be a discussion of how to build the model. Buy several back copies of the Model Builder to get this kind of information. (*Atta baby, Walt! A true company man. WCN*) Instead, there follows a more extended than usual discourse on the techniques for covering these small rubber models. It is not the only possible technique, but it is one that works.

The materials required for performing a good covering job on a model are as follows: Light weight tissue, clear

dope, dope thinner, white glue, and water. Tools required are: fine sandpaper, a sharp razor blade or two, a fine brush, a soft brush at least half an inch wide, and some means of spraying a fine mist of water.

The model structure to be covered must have been assembled long enough for all the cement joints to be thoroughly dry. There is nothing more frustrating than to have a component come apart in the middle of a covering job! Sandpaper is the first tool to go to work. Use it carefully and use it thoroughly. All the framework should be sanded smooth and there should be no cement bumps sticking up out of the

Continued on page 52



Here's where all that area comes from. Bill chose to build the later version cowl with rocker arm bumps. Glutton for punishment!

The MODEL BUILDER

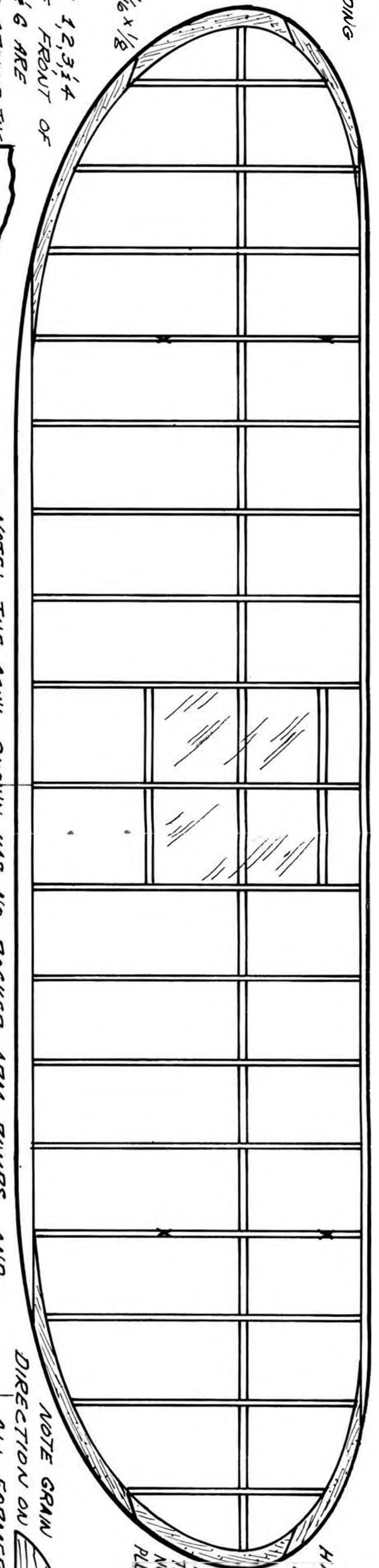


Long tail moment gives the little ship plenty of stability. Prop clearance is a little doubtful, but plastic is tough!

31

WING LEADING  
EDGE IS  
 $\frac{1}{16} \times \frac{1}{8}$   
TIPS ARE  
CUT FROM  
 $\frac{1}{16}$  TH  
SHEET  
TRAILING  
EDGE IS  $\frac{1}{16} \times \frac{1}{8}$   
BALSA.

LAMINATE 1,2,3,4  
TO MAKE FRONT OF  
COWL. 5 & 6 ARE  
ASSEMBLED AROUND THE  
FUSELAGE FRAMES, THEN  
WRAPPED WITH  $\frac{1}{32}$  SHEET.



USE EXTRA  
HARD BALSA OR  
 $\frac{1}{16}$  TH PLYWOOD  
FOR NO. 1. MAKE  
HOLE  
TO  
FIT  
THE  
NOSE  
PLUG

NOTE GRAM  
DIRECTION ON  
ALL FORMERS

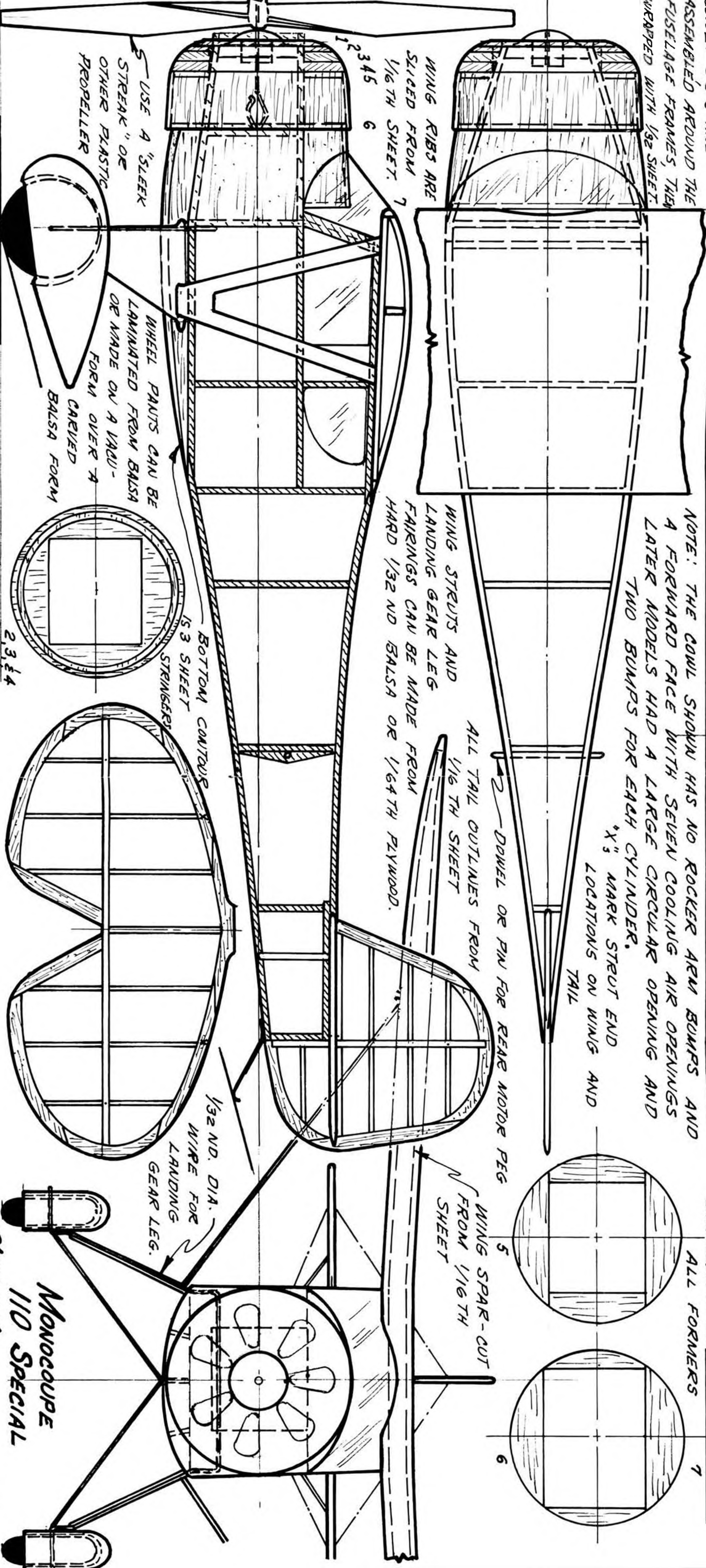
NOTE: THE COWL SHOWN HAS NO ROCKER ARM BUMPS AND  
A FORWARD FACE WITH SEVEN COOLING AIR OPENINGS  
LATER MODELS HAD A LARGE CIRCULAR OPENING AND  
TWO BUMPS FOR EACH CYLINDER.  
\*X\* MARK STREUT END  
LOCATIONS ON WING AND  
TAIL

WING RIBS ARE  
SLICED FROM  
 $\frac{1}{16}$  TH SHEET.

WING STREUTS AND  
LANDING GEAR LEG  
FAIRINGS CAN BE MADE FROM  
HARD  $\frac{1}{32}$  ND BALSA OR  $\frac{1}{64}$  TH PLYWOOD.

ALL TAIL OUTLINES FROM  
 $\frac{1}{16}$  TH SHEET

WING SPAR - CUT  
FROM  $\frac{1}{16}$  TH  
SHEET



USE A "SLEEK  
STREAK" OR  
OTHER PLASTIC  
PROPELLER

WHEEL PAINTS CAN BE  
LAMINATED FROM BALSA  
OR MADE ON A VACU-  
FORM OVER A  
BALSA FORM

BOTTOM CONTOUR  
 $\frac{1}{32}$  SHEET  
STRINGERS

$\frac{1}{32}$  ND. DIA.  
WIRE FOR  
LANDING  
GEAR LEG.



Monocoupe  
110 SPECIAL

Chalk-Murray 12-22-72